Cultural Dynamics of Climate Change and the Environment in Northern America

Climate and Culture

Series Editors

Carmen Meinert
Claus Leggewie

VOLUME 3

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Cultural Dynamics of Climate Change and the Environment in Northern America

Edited by

Bernd Sommer

Contents

Foreword

Man influences the environment and climate and the consequences are now felt around the globe. National or regional efforts to restrict or at least contain the damage can only be insufficient: in principle environmental and climate protection needs a global concept.

Paradoxically, the way we *perceive* environmental and climate change and handle damage is closely linked to local or regional patterns of perception. It is these particularistic perceptions that often lead to different, in many instances opposing reactions to preventive and curative environmental and climate protection measures.

This local view is grounded not only in different ways of socio-economic development in different regions of the world, but also in differences in *cultural patterns*. Think, for example, of the strongly varying notions of the actual problems at hand, or of different policy styles and politico-social environments. Also, the disturbance of the environment and climate causes relatively rapid social changes, in which the interpretation of symbols for the relationship between man and nature plays an important part. The history of climate and culture, patterns of perception of environmental and climate change and an informed assessment of the future direction of environmental and climate policy in various parts of the world have to be taken into account in order to get to grips with the problem.

From a variety of angles, such as the history of ideas, historiography, the study of civilisation, and the political sciences, the monographs and edited volumes in *Climate and Culture* will all deal with the following questions:

- How do local and regional cultures perceive changes in the environment and climate in past and present?
- How did and do they adjust to them?
- How do their various representatives and spokesmen introduce their respective views to the global debate and into emerging international negotiating systems?

The following titles will be included in the series:

VOLUME 1:   *Nature, the Environment and Climate Change in East Asia*, edited by Carmen Meinert, 2013.
VOLUME 2:   *Environmental and Climate Change in South and Southeast Asia*, edited by Barbara Schuler, 2014.

VOLUME 3:   *Cultural Dynamics of Climate Change and the Environment in Northern America*, edited by Bernd Sommer, 2015.

VOLUME 4:   *Climate, History and Culture in Europe*, edited by Claus Leggewie and Franz Mauelshagen (forthcoming 2016).

Carmen Meinert
Claus Leggewie

Acknowledgements

Abbreviations

BBC	British Broadcasting Corporation
BC	British Columbia
BCE	before the common era
BC NDP	British Columbia New Democratic Party
CAA	Clean Air Act
CAN	Climate Action Network
CE	common era
CEO	chief executive officer
CFC	chlorofluorocarbon
COP	Conference of Parties
CPC	Conservative Party of Canada
CRU	Climatic Research Unit
EEC	European Economic Community
ENGO	environmental NGO
ENSO	El Niño/Southern Oscillation
EPA	Environmental Protection Agency
EU	European Union
FOCS	Friends of Clayoquot Sound
G8	Group of Eight
GDP	gross domestic product
GHG	greenhouse gas
GNP	gross national product
IPCC	Intergovernmental Panel on Climate Change
IQ	*Inuit Qaujimajatuqangit*
ka	kilo (1000) years ago
KGH	Den Kongelige Grønlandske Handel
LIA	Little Ice Age
LULU	locally unwanted land use
MAX	Metropolitan Area Express
MCA	Medieval Climate Anomaly
mph	miles per hour
NASA	National Aeronautics and Space Administration
NCAR	National Center for Atmospheric Research
NGO	non-governmental organisation
NIABY	Not In Anyone's Backyard
NIMBY	Not In My Backyard
OPEC	Organisation of the Petroleum Exporting Countries

PCM	progressive conservation movement
RGGI	Regional Greenhouse Gas Initiative
SOTU	State of the Union
SRES	Special Report on Global Emissions Scenarios
STAC	Science and Technical Advisory Committee (Chesapeake, ML)
TEK	traditional ecological knowledge
TLUOS	traditional land use and occupancy study
UEA	University of East Anglia
UNCED	United Nations Conference on Environment and Development
UNFCCC	United Nations Framework Convention on Climate Change
WASP	White, Anglo-Saxon and Protestant
WCI	Western Climate Initiative
WMO	World Meteorological Organisation
WTO	World Trade Organisation

Glossary of Terms in Languages other than English and Names of Key Figures

anthropos	Gr., human (generically male)
Baker, James (born 1930)	US Secretary of State (1989–1992)
Beringia	region including parts of western Russia und Alaska, historically also a land bridge connecting the two continents
Bienville, Jean-Baptiste Le Moyne Sieur de (1680–1767)	governor of French Louisiana
Bush, George H.W. (born 1924)	American President (1989–1993)
Bush, George W. (born 1946)	American President (2001–2009)
byer	Dan., towns
bygder	Dan., settlements
Cabeza de Vaca, Álvar Núñez (c. 1490–c. 1560)	Spanish explorer and trader
Carondelet, Francisco Luis Hector, Baron de (1748–1807)	Spanish governor of Louisiana, West Florida, and El Salvador
Carson, Rachel (1907–1964)	American marine biologist and environmentalist
Carter, James Earl Jr. ("Jimmy") (born 1924)	American President (1977–1981)
Chafee, John Lester Hubbard (1922–1999)	US Senator from Rhode Island (1976–1999)
Champlain, Samuel de (1574–1635)	French founder of New France and Québec City
Charles III of Spain (1716–1788)	King of Spain and the Spanish Indies (1759–1788)
Charles IV of Spain (1748–1819)	King of Spain (1788–1808)
Claudette, Calvin (born 1939)	African-American rights pioneer
Clark, Christy (born 1965)	Premier of British Columbia (since 2011)
Clinton, William Jefferson (Bill) (born 1946)	American President (1993–2001)
Columbus, Christopher (1450/51–1506)	Italian explorer, coloniser
Compagnie des Indes	Fr., Company of the Indies
Compagnie d'Occident	Fr., Company of the West

Conseil de Régie	Fr., Council Board
Conseil Supérieure	Fr., Superior Council
Coronado, Francisco Vásquez de (1510–1554)	Spanish conquistador, discoverer of the Grand Canyon and the Colorado River
Darwin, Charles (1809–1882)	English scientist and originator of evolution theory
Den Kongelige Grønlandske	Dan., Royal Greenland Trade *Handel* (KGH)
Emerson, Ralph Waldo (1803–1882)	American philosopher, leader of the transcendentalist movement
fermiers généraux	Fr., tax farmers
Ford, Henry (1863–1947)	American industrialist
Foucault, Michel (1926–1984)	French post-structuralist philosopher and sociologist
Frank, Robert (born 1924)	American photographer
Gálvez, Bernardo de (1764–1786)	Spanish governor of Louisiana and Cuba, viceroy of New Spain
Gore, Albert Arnold ("Al") (born 1948)	45th Vice President of the United States (1993–2001); the Democratic Party's Nominee for President in 2000; climate activist
Grønlands Hjemmestyre	Dan., Act of Home Rule (commonly called the Home Rule government)
Grønlands styrelse	Dan., Administration of Greenland
Harper, Stephen (born 1959)	Canadian Prime Minister (since 2006)
Hastert, John Dennis (born 1942)	Speaker of the US House of Representatives (1999–2007)
hjemme mark)	Dan., fenced-in fields
Iberville, Pierre Le Moyne	French founder of Louisiana Sieur d' (1661–1706)
Jefferson, Thomas (1743–1826)	American President (1801–1809)
kalaallit	Gl. pl., (Inuit Greenlanders)
koloni	Dan., colony
Kulturlandschaft	Ger., cultural landscape
Landsråd	Dan., Greenland Provincial Council
Lebenswelt	Ger., living world
Leopold, Aldo (1887–1948)	American environmentalist
Louis XIV of France (1638–1715)	King of France (1643–1715), "the Sun King"
marais	Fr., swamp
Malthus, Thomas (1766–1834)	English political economist
Marsh, George Perkins (1801–1882)	American environmentalist
Marshall, Robert (1901–1939)	American forester

McCain, John (born 1936)   American senator of Arizona (since 1987),
                              Republican Presidential Nominee (2008)
McNamara, Robert   American Secretary of Defence (1961–
   (1916–2009)   1968), President of the World Bank (1968–1981)
Muir, John (1838–1914)   American naturalist, preservationist
Murkowski, Frank (born 1933) Governor of Alaska (2002–2006)
Naess, Arne (1912–2009)   Norwegian philosopher; developed the
                              theory of "deep ecology"
Navarro, Diego José   Spanish governor of Cuba (1771; 1777–1782)
   (1708–1784)
nigeq   Gl., foehn winds
Obama, Barack Hussein   American President (since 2009)
   (born 1961)
Olmstead, Frederick Law   American "father of landscape architecture"
   (1822–1903)
ouragan   Fr., hurricane
O'Malley, Martin (born 1963) Governor of Maryland (2007–2015)
Parks, Rosa (1913–2005)   African-American civil rights activist
Pearson, Lester B. (1897–1972) Canadian Prime Minister (1963–1968)
Pinchot, Gifford (1865–1946) America's first professional forester,
                              conservationist
Reagan, Ronald (1911–2004)   American President (1981–1989)
Roosevelt, Franklin Delano   American President (1933–1945)
   (1882–1945)
Roosevelt, Theodore   American President (1901–1909)
   (1858–1919)
Rousseau, Jean-Jacques   French philosopher of the Enlightenment
   (1712–1778)
Savaatillit Peqatigiit   Gl., Federation of Sheep Farmers'
   Suleqatigiissut (SPS)   Associations
Segal, George (1924–2000)   American painter and sculptor
Siumut   Gl., progressive conservative party (Greenland)
Smith, Adam (1723–1790)   Scottish economist
studia humanitatis   Lat., studies of humanity
Sununu, John H. (born 1939)   American politician, climate change denialist
Thoreau, Henry David   American philosopher, environmentalist
   (1817–1862)   and representative of the transcendentalist
                                 movement
Washington, George   First President of the United States of
   (1732–1799)   America (1789–1797)

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Notes on Contributors

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Climates and Cultures in Northern America

Bernd Sommer

1 Cut Down on the Bias

Though anthropogenic climate change is an inherently global phenomenon, its impacts as well as mitigation efforts are always dealt with locally and in a culture-specific way. The assumption that culture mediates individual as well as collective actions related to environmental and climate change is accepted by a wide range of researchers.[1] Therefore, it is common to state that the investigation of anthropogenic climate change needs to take into account the social practices, perceptions, belief systems, and values of specific social groups. Far less simple is, however, to do exactly this: to elaborate the cultural dynamics of a changing climate in a certain place and time. So far, the cultural and societal dimensions of climate change have been largely neglected. This can be illustrated by the assessment reports of the Intergovernmental Panel on Climate Change (IPCC), today's most authoritative source on climate change: The IPCC reports' literature is heavily dominated by natural science disciplines. This does not only apply to the reports on the physical basis of climate change, but also to the reports on impacts, adaptation and vulnerability as well as on mitigation of climate change.[2] Although in recent years a growing number of literature from the social sciences and the humanities has been published on topics such as adaptation, climate migration, climate-friendly behaviour, resilience, vulnerability, etc.,[3] this research remains largely marginalised in the

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1 See e.g. Hoffman, Andrew J., "Climate Change as a Cultural and Behavioral Issue: Addressing Barriers and Implementing Solutions," *Organizational Dynamics* 39 (2010): 295–300; Mauch, Christof, and Sylvia Mayer, "Introduction," in *American Environments: Climate-Cultures-Catasthrope*, ed. Christof Mauch, and Sylvia Mayer (Heidelberg: Universitätsverlag Winter Heidelberg, 2012), 1–5; Welzer, Harald, Hans-Georg Soeffner, and Dana Giesecke, ed. *Klimakulturen: Soziale Wirklichkeiten im Klimawandel* (Frankfurt/Main: Campus, 2010).

2 Hulme, Mike, "Meet the Humanities," *Nature Climate Change* 1 (2011): 177–179.

3 Dryzek, John S., Richard B. Norgaard, and David Schlosberg, ed., *The Oxford Handbook of Climate Change and Society* (Oxford: Oxford University Press, 2011); Voss, Martin, ed., *Der Klimawandel: Sozialwissenschaftliche Perspektiven* (Wiesbaden: VS Verlag, 2010); Welzer, Soeffner, and Giesecke, *Klimakulturen: Soziale Wirklichkeiten im Klimawandel.*

IPCC's assessment reports.[4] If social science literature is processed by the intergovernmental body, it is largely from the field of economics.[5]

The series *Climate and Culture*, of which this anthology on Northern America forms the third volume, can be seen as a further contribution to right this bias. It aims at incorporating the rich knowledge of cultural studies and social sciences into the academic debates on environmental change as well as mitigation of and adaptation to climate change.[6]

The geographic region Northern America as the northernmost of the Americas comprises the territories of Canada, Greenland and the United States of America (US).[7] Within this enormous geographical realm almost every climate can be found, ranging from tropical in southern Florida to subarctic and polar in most of Alaska and Greenland as well as northern Canada. An arid climate can be found in the Great Basin, deserts in the Southwest of the US, a Mediterranean climate in California and alpine mountains in the Western part of the continent. Additionally, extreme weather is a recurring feature of the Northern American climate. The South of the US, bordering the Gulf of Mexico, is repeatedly troubled by hurricanes, and the Midwest of the country is one of the most tornado prone regions in the world. Also disasters such as earthquakes, droughts and wildfires occur with certain regularity. Corresponding to its

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4   Hulme, "Meet the Humanities," 77.

5   Ibid. The IPCC'S Fifth Assessment Report incorporates relatively more literature from the humanities and social sciences. However, the preference of literature from the natural sciences and economics still prevails. Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2014: Synthesis Report* (Geneva: IPCC, 2014).

6   The series *Climate and Culture* is edited by Carmen Meinert and Claus Leggewie. Already published titles within the series focus on East Asia (Meinert, Carmen, ed., *Nature, Environment and Culture in East Asia: The Challenge of Climate Change*, *Climate and Culture* vol. 1 (Leiden: Brill, 2013)) and South and South-East Asia (Schuler, Barbara, ed., *Environmental and Climate Change in South and Southeast Asia: How Are Local Cultures Coping?*, *Climate and Culture* vol. 2, (Leiden: Brill, 2014)). Over the next years, additional volumes will be published on Europe, Africa, the Middle East, the Pacific Region, Latin America, and Central Asia. For Northern America, an earlier attempt to locate environmental change "within larger historical, social, and cultural contexts" was already provided by the volume *American Environments. Climate–Cultures–Catasthrope*, ed. Christof Mauch and Sylvia Mayer. Cf. Mauch, Christof, and Sylvia Mayer, "Introduction," in *American Environments: Climate–Cultures–Catasthrope*, ed. Christof Mauch and Sylvia Mayer (Heidelberg: Universititätsverlag Winter Heidelberg, 2012), 1.

7   According to the United Nations (UN), additionally the Bermuda in the North Atlantic Ocean as well as Saint Pierre and Miquelon, situated in the north-western Atlantic Ocean near Canada, belong to the geographical region of Northern America. Cf. United Nations Statistics Division (UNSD), "Composition of Macro Geographical (Continental) Regions, Geographical Sub-regions, and Selected Economic and other Groupings," accessed May 2, 2014. http://unstats.un.org/unsd/methods/m49/m49regin.htm.

heterogenic climatic conditions, Northern America hosts a 'mega-diverse' ecology; the US belongs to the world's most biodiverse countries.[8]

In the context of the book series *Climate and Culture* as well as in the present volume 'culture' is understood in the broader meaning of cultural anthropology and cultural sociology. Accordingly, culture refers to all forms of notions (symbolic meanings) and practices (including the artefacts generated by them) that individuals share as members of a particular social group or society.[9] Certainly, these 'shared' notions and practices are *never* alike among all members of a specific social group. Especially in modern, highly differentiated societies, they are always individualised to a certain extent.[10] Conceptualised this way, the term 'culture' refers to something that is historically constructed, fluid, and variable in time and space. As its ecology, 'culture' in Northern America is also highly diverse (and therefore more adequately addressed in plural): It comprises countless forms of social practices, habits and traditions, mind-sets and numerous belief systems, religions, languages, etc.

Global warming interacts in multiple ways with Northern American ecological and social systems. While the US and Canada belong to the world's largest per capita emitters of greenhouse gases, the Arctic north of the continent as well as the 'Deep South' are already affected by a changing climate. Having the immense natural as well as cultural diversity of Northern America in mind, the aim of the book series *Climate and Culture* "to provide for a given region and/or cultural setting suitable snapshots [...] in order to lay out a mosaic of ideas, case studies and future projections",[11] is also the only suitable way of investigating the *Cultural Dynamics of Climate Change and the Environment in Northern America.*

Of course, defining the scope of exploration for this volume on geographic terms is arbitrary to a certain extend. For instance, Greenland has a long history of connections to Europe, and Inuit culture in Greenland has been influenced by Danish colonisation as well as nearby Iceland. Something similar can also be witnessed for many places (states, regions, cities, urban quarters) in Northern America. For instance, former French colonies in Canada and the US—such as Québec or Louisiana (with its metropolis New Orleans)—show

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8   Biodiversity A–Z, "Megadiversity Countries," accessed May 2, 2014. http://www.biodiversitya-z.org/areas/26.

9   Eriksen, Thomas H., *Small Paces, Large Issues: An Introduction to Social and Cultural Anthropolgy* (London: Pluto Press, 2010), 4.

10   Cf. Elias, Norbert, *Die Gesellschaft der Individuen* (Frankfurt: Suhrkamp, 1996), 240–245.

11   Meinert, Carmen, "Introduction: Climate and Culture in East Asia," in *Nature, Enviroment and Culture in East Asia: The Challenge of Climate Change*, ed. Carmen Meinert (Leiden: Brill, 2013), 6.

distinct features of "French culture" (i.e. Québec has a predominantly franco-phone population, and French is its sole official language). Moreover, the growing number of people in Northern America referred to as "Hispanics"—which is used as an umbrella term to denote persons who have a factual or assumed historical and cultural relationship with Latin America, Spain or Portugal—additionally exposes the analytical and normative difficulties of linking certain cultural practices to a specific geographical region or even a nation state. Not least, climatic processes and environmental changes do not stop at the (e.g. US-Mexican) border, and thus any attempt to deal with cultural practices concerning the environment and climate change in a clear-cut defined region is in need of explanation. However, the pragmatic approach of this volume to demarcate 'its' area on geography spares the highly problematic endeavour to define something like "the Northern American Culture", including an exact identification of what belongs to it and what does not. Such an attempt would unavoidably entail the danger of promoting "culturalism", putting forward an essentialised notion of culture.[12] The 'snapshot approach' applied for this volume is open for all the numerous cultural practices which can be empirically found in Northern America—being aware of the fact that such an endeavour always remains fragmentary and incomplete.

2   Society–Nature Interactions in Northern America

Theorising the relation between nature and culture in Northern America, respectively interactions between the environment and society, has a long tradition. Already Alexis de Tocqueville described in his classic study on *Democracy in America* how the "nature of the territory which the Americans inhabit" was favourable for "the establishment and maintenance of a democratic republic in the United States".[13] A rich vegetation, combined with a fertile soil and a seemingly boundless continent provided the basis for a general prosperity which Tocqueville viewed as beneficial for all governments, but particularly democracies, which especially depend on the support of the majority. "In the United States," Tocqueville wrote, "not only is legislation democratic, but nature herself favours the cause of the people".[14] About 60 years later, in 1893, the

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12   Fredrickson, George M., *Racism: A Short History* (Princeton, New Jersey: Princeton University Press, 2002), 7.

13   Tocqueville, Alexis de, *Democracy in America*, vols. 1 and 2 (New York: Bantam Bell, 2002 [1835]), 337.

14   Ibid., 338.

US historian Frederick Jackson Turner famously argued that American society—including its egalitarianism and notion of democracy—was formed by the frontier experience, the progressive moving of the frontier from east to west.[15] Especially in the late 18th and 19th century, US history and political culture were perceived to be formed by interaction with the natural environment.[16]

For generations of European pioneers and settlers, the aim of this interaction was relatively clear: nature was seen as something which has to be domesticated, something which can and should be exploited. Nature was supposed to serve the fulfilment of human ends and desires. During his trip to the US, Tocqueville observed:

> In Europe, people talk a great deal of the wilds of America, but the Americans themselves never think about them; they are insensible to the wonders of inanimate nature and they may be said not to perceive the mighty forests that surround them till they fall beneath the hatchet. Their eyes are fixed upon other sight [...] the march across the wilds, draining swamps, turning the course of rivers, peopling solitudes, and subduing nature.[17]

This utilitarian or even antagonistic attitude towards nature is closely connected to European colonisation of the North American continent. Previously, of course, there have already been hunters and gatherers as well as agrarian societies in the "New World", which did not perceive nature in this way.[18] For most settlers and colonialists, the wilderness—predominantly those parts of nature which were not subject to human control—constituted a threat to their survival: safety and comfort as well as necessities like food and shelter depended on overcoming the natural environment. In his study on the changing American attitudes towards the wilderness, Roderick Frazier Nash puts it as follows: "There was, initially, too much wilderness for appreciation."[19] However, pioneers did not only combat the natural environment for personal survival,

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15   Turner, Frederick Jackson, *The Frontier in American History* (New York: Digireads.com, 2010 [1893]).

16   Mauch, and Mayer, "Introduction," 1–2.

17   Tocqueville, *Democracy in America*, 590.

18   Though, the romantic notion that Native Americans lived in harmony with nature can be revealed as a myth. Cf. Krech, Shephard III, *The Ecological Indian: Myth and History* (New York, London: W.W. Norton & Company, 1999).

19   Nash, Roderick F., *Wilderness and the American Mind* (New Haven, London: Yale University Press, 2001 [1967]), xiii.

physical well-being and material progress, but also in the name of ideologies (such as nationalism or racism) and religions.[20]

The ending of the American frontier in the 19th century, began to work on behalf of nature. The children and grandchildren of the pioneers began to sense nature's ethical and aesthetic values. Ironically, appreciation of nature and wilderness began in the cities.[21] Concern over the loss of nature led to calls for its protection and the creation of the first national parks. One of the most famous representatives of this 19th century environmentalism was Henry David Thoreau, best known for his book *Walden*, in which he reflects on his two-year experiment of simple living in the woods.[22] For Thoreau, the preservation of nature was not an end in itself; he saw the preservation of wilderness as important for the preservation of civilisation.[23]

During the presidency of Theodore Roosevelt (1901–1909), who became famous for his appreciation of nature and the conservationist stance, the protection of wildlife received further support. Under his authority, additionally about 230,000,000 acres of public land became protected, including the establishment of 51 Federal Bird Reservations, four National Game Preserves, 150 National Forests, five National Parks, and the proclamation of eighteen National Monuments through the American Antiquities Act of 1906.[24]

In the 1960s and 1970s—accompanied by broad changes in societal values[25]—environmentalism became a powerful social movement. In 1962, Rachel Carson published *Silent Spring*,[26] which brought the harmful effects of the uncritical use of pesticides on the environment—particularly on birds—to the attention of the American public and became an icon of a new era of environmentalism. In subsequent years, in the US, a flourishing environmental movement emerged, involving charismatic activists, new organisations and forms of protest that have been a source of inspiration for environmentalists

20   Ibid., 25.

21   Ibid., 44.

22   Thoreau, Henry D., *Walden, or Life in the Woods* (New Haven, London: Yale University Press, 2006 [1854]).

23   Nash, *Wilderness and the American Mind*, 102.

24   National Park Service, "Theodore Roosevelt and Conservation," accessed January 15, 2015. http://www.nps.gov/thro/historyculture/theodore-roosevelt-and-conservation.htm.

25   Ingelhart, Roland, *The Silent Revolution: Changing Values and Political Styles Among Western Publics* (Princeton: Princeton University Press, 1977).

26   Carson, Rachel, *Silent Spring* (Boston, New York: Mariner Book, Houghton Mifflin Company, 2002 [1962]).

around the world.[27] During the same time, respectively the late 1960s and early 1970s, environmental policy was 'invented' in the US: for the sake of environmental protection in the US, various laws, such as the *Clean Air Act* (1963), the *National Environmental Policy Act* (1969) or the *Endangered Species Act* (1973) were passed, new agencies, such as the *Environmental Protection Agency* (1970), introduced, and the federal government was promoting an environmental agenda at the United Nations.[28]

The rise of environmentalism in the middle of the last century, however, is also closely connected to a "growing criticism of American culture".[29] The "American Way of Life" has been increasingly associated with resource-intensive lifestyles, 'consumerism', and its devastating environmental impacts.

3   The Growing Divide

In recent years, American views on nature and environmental protection are twofold and have become increasingly polarised. This applies especially to the issue of anthropogenic climate change. While the debate of climate change has reached the level of a "scientific consensus",[30] social research highlights a growing divide of the US American public on this issue.[31] Climate change has become a politically charged and partisan topic: Republicans and/or

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27   For instance, in 1969, David Brower (who allegedly is the father of the slogan "Think globally, act locally") founded the international environmental organisation *Friends of the Earth*. In 1970, biologist Barry Commoner was on the cover of *Time Magazine*, and on the 22nd of April 1972 *Earth Day* was celebrated in many American cities for the first time. Cf. Radkau, Joachim, *Die Ära der Ökologie: Eine Weltgeschichte* (München: C.H. Beck, 2011), 143–147.

28   This era has repeatedly been called "The 'Golden Age' of Environmental Law". See for example, Klein, Naomi, *This Changes Everything: Capitalism vs. the Climate* (London: Allen Lane, 2014), 201–202; Martinez, Hayley, "An Evening with the Writers of the Clean Air Act: Insight into the 'Golden Age' of Environmental Law," Published by The Earth Institute, Columbia University, accessed January 15, 2015. http://blogs.ei.columbia.edu/2014/10/24/an-evening-with-the-writers-of-the-clean-air-act-insight-into-the-golden-age-of-environmental-law/. Canadian Journalist Naomi Klein refers to twenty-three federal environmental acts that became law over the 1970s alone. Cf. Klein, *This Changes Everything*, 202.

29   Nash, *Wilderness and the American Mind*, vii.

30   Anderegg, William R.L. et al., "Expert Credibility in Climate Change," *Proceedings of the National Academy of Sciences* 107.27 (2010): 12107–12109.

31   Cf. Hoffman, Andrew J., "The Growing Climate Divide," *Nature Climate Change* 1 (2011): 195–196.

conservatives are more likely than Democrats and/or liberals to believe that either the earth is not warming or not mainly due to human activities.[32] A similar political cleavage can also be found in Canada.[33] Additionally, in Canada and the US alike, the population of regions that are benefiting economically from the extraction of fossil fuels (such as Alberta, Canada or the Gulf Coast in the United States) show a relatively strong support of the dismissal of the scientific consensus on global warming.[34]

This political rift, however, does not only manifest itself on the level of opinion polls: On the one hand, the US—and since 2011, also Canada—have been rejecting internationally binding climate targets, and on the federal level, ambitious climate policy has not found a congressional majority. The anthropogenic causes for global warming as well as impacts are repeatedly denied or played down by mainstream media[35] and politicians[36]—occasionally, even by referring to religious arguments.[37]

On the other hand, despite the current boom of oil and gas that has been hydraulically fractured, within the G-20 major economies, the US is one of the leading investors in clean energies.[38] And on the sub-federal level, more than half of the US states are considering, developing, or implementing climate

32   Hoffman, "The Growing Climate Divide."

33   The Environics Institute, "Focus Canada 2013: Canadian Public Opinion about Climate Change," accessed January 15, 2015. http://www.environicsinstitute.org/uploads/news/focus%20canada%202013%20-%20public%20opinion%20on%20climate%20change%20-%20english.pdf.

34   Hamilton, Lawrence C., "Climate Change: Partisanship, Understanding, and Public Opinion," *The Carsey School of Public Policy at the Scholars' Reprosity*, Paper 134 (2011), accessed January 15, 2015. http://scholars.unh.edu/carsey/134.

35   Antilla, Liisa, "Climate of Scepticism: US Newspaper Coverage of the Science of Climate Change," *Global Environmental Change* 15 (2005): 338–352; Boykoff, Mawell T., and Jules Boykoff, "Balance as Bias: Global Warming and the US Prestige Press," *Global Environmental Change* 14.2 (2004): 125–136.

36   Jacques, Peter J. et al., "The Organisation of Denial: Conservative Think Tanks and Environmental Scepticism," *Environmental Politics* 17.3 (2008), 349–385.

37   For instance, John Mondy Shimkus, congressional representative for Illinois, during a subcommittee hearing on adaptation policies for dealing with climate change argued that global warming isn't something to worry about because God said he wouldn't destroy the Earth after Noah's flood. Cf. Samuelsohn, Darren, "John Shimkus Cites Genesis on Climate," published by Politico, accessed May 10, 2014. http://www.politico.com/news/stories/1110/44958.html.

38   The PEW Charitable Trusts, "Who's Winning the Clean Energy Race?," accessed May 10. http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Report/-clenG20-Report-2012-Digital.pdf.

policies.[39] In 2005, several North-eastern and Mid-Atlantic states formed the Regional Greenhouse Gas Initiative (RGGI), the first mandatory US cap-and-trade program for carbon dioxide. California's *Global Warming Solution Act* of 2006 also aims at creating a state-wide cap-and-trade system, which is supposed to be linked with systems in other states and Canadian provinces under the Western Climate Initiative (WCI).

In terms of publications, the US is the world's leading nation in climate science.[40] What we know about global warming, is largely knowledge generated by US researchers and research institutions. Additionally, similar to the environmental movement in the 1960s and 1970s, climate activism is strong in Northern America and holds a powerful impact on movements around the globe: Al Gore, the Democratic Party's nominee for President in 2000, raised the awareness of climate change internationally with his Academy Award-winning documentary film *An Inconvenient Truth* (2006).[41] Moreover, environmentalist organisations, such as 350.org (founded by the American environmentalist Bill McKibben), represent some of the biggest global grass-roots movements dealing with climate change.[42]

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39   Stavins, Robert N., "The National Context of U.S. State Policies for a Global Commons Problem," *Policy Brief*, published by UNEP Risoe Centre on Energy, Climate and Sustainable Development, November 2011, accessed May 10, 2014. http://www.hks.harvard.edu/fs/rstavins/Selected_Articles/Stavins_Perspectives_Durban_2011.pdf.

40   In 34 percent of the more than 100.000 research papers in climate science published during the last 5 years, researchers from the US were involved; second are researchers from Great Britain, who participated in 11 percent of all climate studies and third are German-based reserachers, who took part in 9 percent of all studies. Cf. Sommer, Bernd, "Exzellente deutsche Klimaforschung," published by Spektrum der Wissenschaft, accessed May 2, 2014. http://www.spektrum.de/alias/klimapolitik/exzellente-deutsche-klimaforschung/1256194.

41   Jointly with the Intergovernmental Panel on Climate Change (IPCC), in 2007 Al Gore received the Nobel Peace Price "for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change". Cf. Nobelprize.org, "The Nobel Peace Prize 2007," accessed May 10, 2014. http://www.nobelprize.org/nobel_prizes/peace/laureates/2007/index.html.

42   On September 21, 2014, more than 300,000 participants attended the so-called "People's Climate March" (organised by 350.org) in New York City, which thereby became the largest climate rally in history worldwide. The march took place in the forerun of an UN summit organised by United Nations' Secretary General Ban Ki-moon in order to improve the chances for a world climate treaty under the aegis of the United Nations Framework Convention on Climate Change (UNFCCC) in Paris 2015.

This polarisation of the American public as well as politics, can paradigmatically be illustrated by the *Keystone Pipeline* project. The *Keystone Pipeline* is a more than 3,000 km-long oil pipeline system that carries crude oil, including oil from tar sands in Alberta in Western Canada, to refineries in the US. After several extensions, the system, since January 2014, even includes refineries in Texas and on the Gulf of Mexico. The various phases of extension faced criticism from environmentalists and some members of the US Congress. An additional extension, the so-called *Keystone XL Proposal*, is disputed due to the risk of oil spills along the pipeline and its impact on Nebraska's ecologically sensitive Sand Hills. However, related to the controversy surrounding the *Keystone Pipeline* is an even more significant symbolic dimension. Energy from tar sands is supposed to be particularly carbon intensive and damaging to the environment. Therefore, the building of the pipeline is expected to exacerbate climate change.[43] Promoting a large-scale infrastructure project, such as the *Keystone XL* oil pipeline, is seen as a symbol of holding on to an energy supply based on fossil fuels that contributes to climate change.[44]

Consequently, the *Keystone Pipeline* project provoked some of the most visible environmental and climate rallies in recent years. In August 2011, more than 1,000 protestors were arrested in front of the White House, including environmental activists such as Bill McKibben and Phil Radford as well as celebrities such as actress Daryl Hannah. Just a couple of months later (November 2011), several thousand protestors formed a human chain around the White House to call on US President Barack Obama to reject the planned pipeline extension. And in February 2013, major environmental organisations such as The Sierra Club and 350.org organised another protest march in Washington,

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43   Biello, David, "Keystone XL Oil Pipeline Exacerbates Climate Change," *Scientific American*, April 17, 2013, accessed May 10, 2014. http://www.scientificamerican.com/article/keystone-xl-oil-pipeline-exacerbates-climate-change/.

44   See e.g. the editorial of the *New York Times*, "When to Say No", from March 10, 2013: The State Department's latest environmental assessment of the controversial Keystone XL oil pipeline makes no recommendation about whether President Obama should approve it. Here is ours. He should say no, and for one overriding reason: A president who has repeatedly identified climate change as one of humanity's most pressing dangers cannot in good conscience approve a project that—even by the State Department's most cautious calculations—can only add to the problem. [...] In itself, the Keystone pipeline will not push the world into a climate apocalypse. But it will continue to fuel our appetite for oil and add to the carbon load in the atmosphere. There is no need to accept it. Cf. "When to Say No," *New York Times*, March 10, 2013, accessed May 10, 2014. http://www.nytimes.com/2013/03/11/opinion/when-to-say-no-to-the-keystone-xl.html?smid=pl-share&_r=0.

D.C., which about 35,000 people attended—again, including many public environmental leaders and celebrities.[45]

However, this is just one—the environmentally prone—part of the *Keystone XL* story. Repeatedly, various senators and governors urged the federal government to approve the extension of the pipeline. Proponents argue that it would allow the US to increase its energy security and reduce its dependency on 'foreign oil'. Additionally, the *Keystone Pipeline* is supposed to create several thousand new jobs. Opinion polls, taken by various independent polling organisations, have shown a continued support of the *Keystone XL Pipeline* by the majority of the American people.[46] In January 2015, legislation passed the US Senate approving the *Keystone XL Pipeline* on a 62-36 vote (including the votes of nine Democratic Members). However, the administration of President Barack Obama announced to veto the decison due to the outstanding assessment of environmental impacts.

4 Exploring the Cultural Dynamics of Climate Change and the Environment in Northern America from Multiple Perspectives

A characteristic feature of the book series *Climate and Culture* is its interdisciplinary approach. Hence, the volume on *Cultural Dynamics of Climate Change and the Environment in Northern America* entails contributions from academics from various fields such as anthropology, art history, educational studies, climate science, cultural studies, environmental science, history, philosophy, political science, psychology, and sociology.

In recent years, there have been numerous conferences, workshops, and publications that focussed on specific dimensions of climate change and the environment (such as "Climate Politics", "Environmental History" or "Climate Change and the Media"). This book not only pursues an interdisciplinary approach, but simultaneously looks at various aspects of the multifaceted image of cultural representations of climate change as well as the environment in Northern America. It is led by the assumption that additional insights can be

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45   Goldenberg, Suzanne, "Keystone XL Protestors Pressure Obama on Climate Change Promise," *The Guardian*, February 17, 2013, accessed May 10, 2014. http://www.theguard ian.com/environment/2013/feb/17/keystone-xl-pipeline-protest-dc.

46   See e.g. Pew Research Center, "Continued Support for Keystone XL Pipeline," published September 26, 2013, accessed May 10, 2014. http://www.people-press.org/2013/09/26/continued-support-for-keystone-xl-pipeline/.

gained if different fields of interest and approaches are convened in one volume.

All volumes within the Brill series *Climate and Culture* are structured along the four main topics "Ideas", "Past", "Present", and "Prospects". Accordingly, this anthology on *Cultural Dynamics of Climate Change and the Environment in Northern America* opens with a more general discussion on the ideological foundations of society–nature–interactions in Northern America. The text "The 'American Way of Life' and Views on Climate Change and the Environment" by Roland Benedikter, Eugene Cordero, and Anne Marie Todd discusses key arguments of the current US debate on climate change and the environment, its dialectics and potential reasons for an increasingly polarised public on these issues. The chapter aims at providing a 'broad picture' of cultural aspects of climate change and the environment and thus touches various issues that are dealt with more specifically in the following contributions of the book.

Angela Mertig, in the following chapter, gives a comprehensive overview of the American environmental movement and its motives in the 19th and 20th century. From its approximate beginnings in the conservation movement towards the end of the 19th century, the movement has evolved from a relatively narrow engagement with the conservation of local resources and the preservation of scenic areas, parks and forests to the broader concerns of toxic pollution, protection of biodiversity and prevention of global warming.

It is not easy to pinpoint what exactly the "American Way of Life" is. Besides the adherence to principles of "life, liberty and the pursuit of happiness" (*Declaration of Independence*), the "American Way of Life" is presumably connected to individual motor car traffic, living in suburbia, and thus cannot be found in America only. Moreover, it is more than a set of certain cultural practices but can become an ideology that has an impact on the commitment or non-commitment to environmental agreements.[47] In the third chapter, Frederic

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47   In 1992, at the so-called Earth Summit in Rio de Janeiro (The United Nations Conference on Environment and Development), US president George Bush Senior forcefully declared, "The American way of life is not negotiable". Cf. McGregor, Alisdair, Cole Roberts, and Fiona Cousins, *Two Degrees: The Built Environment and Our Changing Climate* (Oxon, New York: Routledge Chapman & Hal, 2012), 141. Also more recently, "the American way of life" has repeatedly been evoked in order to dismiss ambitious climate change mitigation efforts. For instance, Thomas J. Donohue, President of the US Chamber of Commerce, declared in 2008: "There is no way this [CO_2 reductions of 80 percent by 2050] can be done without fundamentally changing the American way of life, choking off economic development, and putting large segments of our economy out of business." Cf. Donohue, Thomas J., "Managing a Changing Climate: Challenges & Opportunities for the Buckeye State, Remarks," speech given in Columbus, Ohio, May 2, 2008, accessed January 15, 2015.

Hanusch more systematically explores "The Role of Norms for US Foreign Climate Policy". Based on a social constructivist approach in International Relations, Hanusch focuses on the empirical case of US foreign climate policy from its beginnings in in 1972 until 2005. He shows how norms within the field of climate policy define a government's room for manoeuvre and that domestic norms continue to dominate US foreign climate policy.

Certain topics of distinct importance are addressed repeatedly and in various papers of this anthology. One of these is religion. The role of religions and religious belief systems in determining human practices towards nature and the environment has been subject to heated academic debates for many years.[48] Religious dimensions also form an important aspect of the cultural dynamics of climate change and the environment in Northern America. Although the US hosts some of the world's leading climate science institutions, religious explanations of why global warming is or is not happening, are of societal and political relevance, too. Accordingly, various authors of the volume in their contributions deal inter alia with religious aspects of the societal relations to nature in Northern America (e.g. Benedikter, Cordero, and Todd; Mertig; Eudell; Heinrichs).

The section "Past" explores how the cultural dynamics of climate change and the environment became manifest in the course of Northern American history. Firstly, Kenneth M. Sylvester, Richard Tucker, and Samuel White provide a broad overview of crucial weather events and climatic changes from the time of the Paleoindians to the 20th century. This chapter chronologically charts the development of climate in the history of the continent in light of its historiography and central sources.

Tropical cyclones that occur in the North Atlantic basin are a recurrent feature of the climate in the eastern and southern part of North America. New Orleans's geographical location makes it especially prone to hurricanes. Hurricane Katrina that struck New Orleans and Louisiana in August 2005 became an icon for the vulnerability of modern societies towards climate related

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http://www.uschamber.com/speech/managing-changing-climate-challenges-opportunities-buckeye-state-remarks.

48   See, for example, Lynn White's classic essay on "The Historical Roots of Our Ecologic Crisis," in which he traces back the root of the modern ecological crisis to Judeo-Christian theology and its influence since the Middle Ages. Cf. White, Lynn, "The Historical Roots of Our Ecological Crisis," *Science* 155.3767 (1967): 1203–1207. A more recent and comprehensive overview of how various religions relate to the natural environment is given in a special issue of *Dædalus* on religion and ecology: Tucker, Mary Evelyn, and John A. Grim, *Daedalus* vol. 130.4, *Special Issue Religion and Ecology: Can the Climate Change?* (Cambridge, Massachusetts: MIT Press, 2001).

disasters. Overall, 1,833 fatalities and damage cost of estimated USD 108 billion are attributed to Katrina, making it one of the most destructive hurricanes in US history.[49] Two contributions to the "Past" section of this book deal with the history of societal impacts of tropical cyclons in New Orleans, respectively the prehistory of hurricane Katrina. Along a timeline of hurricane impacts in New Orleans, Eleonora Rohland provides brief accounts of three particularly devastating, back-to-back hurricane events that occurred throughout the city's French and Spanish reigns between 1718 and 1794. On the basis of this historical account, Rohland reconstructs the adaptive practices that developed in New Orleans with regard to hurricanes between the city's foundation in 1718 and the eve of the Louisiana Purchase in 1804. Demetrius Eudell's analysis "The Landscapes of Man" also examines society-nature interactions in Louisiana. Taking the devastating impacts of Hurrican Katrina (2005) and the scenarios of the IPCC as a starting point, Eudell portrays how the landscape in South Louisiana—which is nowadays seen as particulary vulnerable to climate impacts— has been historically shaped by a certain social order. Especially in this region of the US, this order was constituted by slavery and the continued suppression of Blacks. In the light of this analysis, labelling Hurricane Katrina as a 'natural disaster' appears to be deficient.

The section "Present" deals with current representations of climate change and the environment, respectively, environmentally relevant social practices in America. Here too, the spectrum of analysis is rather broad: Climate change as well as other forms of environmental change—such as loss of biodiversity or depletion of stratospheric ozone—are highly mediatised events. In contrast to many forms of conventional pollution, its causes and impacts can hardly be experienced directly on a personal level. Instead, we know about these environmental issues thanks to scientific findings that are mostly brought to a broader public by the various forms of mass media. Maxwell T. Boykoff and Michael K. Goodman explore in their chapter how mass media shape US American climate discourse. They argue that mass media reporting of climate change and climate sciences work to both inform but also obfuscate climate science and its associated cultural politics.

Next, Jürgen Heinrichs takes the readers of the volume on a twofold journey: not only on a bus ride through Newark, New Jersey, but also on a *tour d'horizon* of the cultural history of bus driving in the US. In recent years, bus driving (as public transport in general) has been increasingly promoted as a climate-

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49   Knabb, Richard D., Jamie R. Rhome, and Daniel P. Brown, *Tropical Cyclone Report Hurricane Katrina 23–30 August 2005*, accessed January 15, 2015. http://www.nhc.noaa.gov/pdf/TCR-AL122005_Katrina.pdf.

friendly means of transportation. Heinrichs shows that the bus and bus driving cannot only be viewed from this ecological perspective, but has always been far more than a mere means of transportation. Throughout American history it was charged with different cultural meanings and repeatedly became the arena for major societal conflicts and struggles. Taking a bus in Greater New York today raises questions of racialised poverty, street violence and environmental change in contemporary America.

Karin Schürmann, in the next chapter of this section, examines the relevance of attitudes towards climate change and the environment for everyday life practices in America today. Engaging descriptions of contemporary practice, theoretical approaches and interviews with 21 persons living in urban centres along the Northern US West Coast (among others in Portland, Oregon), Schürmann provides insights in the relationship between environmental and climate-relevant beliefs and behaviour and de-constructs the notion of a causal relationship between thinking and acting. Here, Schürmann addresses the so-called "mind–behaviour gap", the well-documented phenomen that people regularly do not act according to their (environmental) knowledge and awareness.[50] While Schürmann explores this issue in the field of mitigation, Grit Martinez and Michael J. Paolisso later on describe the rift between knowledge and action in their contribution on adaptation to climate change on the US East Coast (see below).

Following Schürman, Omer Aijazi and Martin David take the readers of the anthology further north to Vancouver, British Columbia, on the Canadian side of the US-Canadian border. Vancouver has a vivid history of the articulation and enactment of various environmental concerns (for instance, Vancouver is the birthplace of the today globally operating Greenpeace movement), and this also is the strand Aijazi and David follow. Informed by educational studies, cultural studies, and post-colonial theory, they explore the common opposition of First Nation groups and environmental non-governmental organisations (NGOS) to the construction of the Enbridge Northern Gateway pipeline that could be witnessed in Vancouver during the years 2013 and 2014. Aijazi and David carve out that although First Nation groups and environmental NGOS form an alliance rallying against the Endbridge pipeline, they are movitated for their protest by primarily different motives.

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50   Kollmuss, Anja, and Julian Agyeman, "Mind the Gap: Why do People Act Environmentally and What Are the Barriers to Pro-environmental Behavior?," *Environmental Education Research* 8.3 (2002): 239–260.

The global average temperature shows a warming of 0.85°C over the period from 1880 to 2012.[51] However, this global rise of temperature has not been observed in every place around the globe. Especially the Arctic—including Greenland as well as Northern Canada and Alaska—has been particularly affected.[52] Therefore, the Arctic has been repeatedly described as an early warning system for global climate change: Whatever is happening there, will sooner or later happen in other parts of the world, too.[53] Naotaka Hayashi's text in the section "Prospects" explores adaptation to climate change in Greenland. On the basis of his extensive fieldwork among sheep farmers in Greenland as well as the Endogenous Development Theory by sociologist Kazuko Tsurumi, Hayashi argues that governments should seriously take into account local efforts to cope with a changing climate in the past in order to build a resilient community today.

The cultural dynamics of adaptation to climate change also lie at the center of the contribution by Grit Martinez and Michael J. Paolisso. Since adapting to climate change also means adapting to projected and modelled developments—such as the rise of sea levels—questions of adaption generally deal with imagined futures of society-nature-interactions. Though Martinez and Paolisso draw on their fieldwork from a different geographical as well as cultural context (Dorchester County, a region along the state of Maryland's portion of the Chesapeake Bay), their findings are similar to those of Hayashi's for Greenland: If regional and local policies for adaptation to a changing climate are to be effective and sustainable, they must be understood and developed within a given cultural perspective through an understanding and appreciation of local knowledge, values and belief systems.

The last contribution to the section "Prospects" differs from these anthropologically informed texts on climate change adaptation. In "Back to the Future", Antonia Mehnert explores climate change futures in US American literature. Of course, these fictional accounts sometimes have little to do with the scenarios of climate scientists. However, the fantasies and fears that are condensed in bestselling novels such as *A Friend of the Earth* by T.C. Boyle[54] or

51   Intergovernmental Panel on Climate Change (IPCC), "Summary for Policy Makers," in *Climate Change 2013: The Physical Science Basis: Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. T.F. Stocker et al. (Cambridge, New York: Cambridge University Press, 2013), accessed May 14, 2014. http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf.

52   Notz, Dirk, "Die Arktis im Klimawandel," *Aus Politik und Zeitgeschichte* 5–6 (2011): 23–29.

53   Ibid.; Fuchs, Arved, "Nordpoldämmerung," *Aus Politik und Zeitgeschichte* 5–6 (2011): 3–6.

54   Boyle, Tom Coraghessan, *A Friend of the Earth* (London: Bloomsbury Publishing, 2000).

State of Fear by Michael Crichton[55] "play a powerful role in the general perception of the natural environment and in the production of knowledge".[56] Conclusively, Mehnert's text exemplifies the idea that 'culture matters'—even for the understanding of nature.

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55   Crichton, Michael, *State of Fear* (London: Harper Collins, 2004). In *State of Fear* Michael Crichton describes how environmental terrorists plot to cause artificially natural disasters in order to publicise the danger of global warming. What is special about the fictional novel is that it contains a huge number of climate graphs, footnotes, appendices as well as an almost thirty-page bibliography.
56   Mauch, and Mayer, "Introduction," 2.

PART 1

Ideas

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CHAPTER 1

The "American Way of Life" and US Views on Climate Change and the Environment

Roland Benedikter, Eugene Cordero and Anne Marie Todd

Abstract

This chapter discusses some cornerstones of the current United States debate on climate change and the environment, its socio-cultural and historical backgrounds, and some potential perspectives. It provides a macro-typological—and thus necessarily in many ways reductive and incomplete—introduction into a complex and controversial topic currently in the midst of rapid development. This chapter does not claim to represent 'the' American mindset towards nature or 'the' US view on the question of whether man-made activities are the cause of global warming or not, but aims at providing a primary and generalistic framework for analysing cultural aspects of views on climate change and the environment in the US. It thereby touches on more specific issues and trajectories found in the following chapters of this book.

1 Prerequisites

Generalisations are always problematic, especially when they are meant to construct a link between a nation or area and an alleged nation- or area-specific 'cultural habit' towards specific policy issues. Nevertheless, the task of this book is to try to get a grip on 'American views' on the environment and climate change by including socio-cultural dynamics and contexts. This occurs in a moment of deep cultural polarisation in the US where "political dysfunction" (according to Francis Fukuyama)[1] is debated in terms of deeply colliding 'cultural' visions between liberals and conservatives of what is 'American' and what not—a discussion which exactly due to its generalisations often tends to simplifications which are rather harmful instead of fostering dialogue. In this constellation, it has to be underscored right from the start that in modern, highly differentiated and multi-faceted societies characterised in their basic

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1   Fukuyama, Francis, "American Political Dysfunction," *The American Interest* 2.2 (2011), accessed August 23, 2013. http://www.the-american-interest.com/article.cfm?piece=1114.

structure by a historically rooted democratic culture reliant on a programmatic plurality of mindsets, such as the United States, there is in principle no concept and no worldview that can claim to represent 'the' US view in generalising terms.

As a consequence, there can be—as it should be obvious—no such thing as 'the' cultural mindset of the US regarding concepts such as the environment or nature. In particular, there can be (and is) no overarching consensus of what an assumed or potential 'US view' on climate change and the environment could be. How could it be identified—apart from polls which are strongly dependent on ever-changing historical, political and economic contexts and on signal events; how is it developing (since it is certain that viewpoints are strongly dynamic issues, not static ones as cultural generalisations sometimes tend to suggest); and how could it differ substantially (i.e., dependent on its cultural specifics) from similarly dynamic views present in other modern societies or socio-political contexts? With these critical prerequisites in mind, some descriptive aspects indicating probably more of a situation in flux than of an overarching cultural 'truth' can—and should—now be mentioned.

2   Basic Themes and Topics

First, the present, highly controversial public and academic discussion of the question of climate change and the environment in the US is undoubtedly taking place in the interplay between differing political inclinations and ideologies, i.e. at the intersection of the 'classic' dichotomy Liberal versus Conservative. While the majority of the liberal side departs from the assumption that climate change exists and tends to ascribe it to human activity, a substantial part of the conservative side does not recognise that there is an urgent environmental question at all, and in particular that there is such a thing as man-made climate change.[2] The US debate thus in principle manifests a more divided picture of approaches partly characterised by more radical arguments than the European discussion where there is greater unanimity about basic facts and their interpretation.

Interestingly, despite all differences, both liberals and conservatives use arguments about 'American' social habits and traditions, historic founding myths, and (imagined) identities of the New World to make their point. The

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2   Hoffmann, Andrew J., "The Growing Climate Divide," in *Nature Climate Change*, vol. 1, published July 2011, accessed August 23, 2013. http://webuser.bus.umich.edu/ajhoff/pub_academic/2011%20Nature%20Climate%20Change.pdf.

discourses of both liberals and conservatives encompass (but are not limited to) the implications and effects of American myths on perceptions of nature and the environment such as the "American Dream"—i.e. the possibility to access a stable middle class life through one's own hard work—, the "American Way of Life"—i.e. the right to pursue one's own happiness, sustained by a society that furthers upward mobility and competition and rewards activity and engagement, including change and transformation of the given; and the myth of "Going West", based on the notions of "Crossing Borders" and "Open Frontiers" in a still 'untouched' and in principle 'inviting' new land. All these myths are at the same time heavily contested between both groups, and thus their projection upon the environmental question and climate change remains highly controversial.

Just one example among many of the contradictory—and to a certain extent split—character of basic conceptions of the environment and the climate question in the present-day United States is the notion of "wilderness", i.e. the myth of a self-regulating nature that is (and should remain) in principle independent of human intervention. On the one hand (the liberal side), wilderness is a topic that scores of scholars—although in their majority less known to the broader international public—have written about in a postmodern, rather deconstructivist sense, for example Roderick Nash in *Wilderness and the American Mind*,[3] and William Cronon's "The Trouble with Wilderness".[4] One of the basic insights of this literature is that a 'wilderness' never really existed, if only because the American continent had already been settled by local natives before the European immigration and the landscape that the Europeans encountered had already been heavily transformed by the indigenous population, most importantly by the use of fire.

On the other hand (i.e. the conservative side), there seems to be a still lively 'realistic' notion of 'wilderness' (as an inherent definition of nature) in the US, conceived as the classical 'other' dimension of the human (cultural) experience, often endowed with spiritual or even religious traits. This line of thought goes further back in history, and comprises, but is not limited to, the Americanisation of Romanticism in the work of Walt Whitman, most notably

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3   Nash, Roderick, *Wilderness and the American Mind* (New Haven: Yale University Press 2001).

4   Cronon, William, "The Trouble with Wilderness: Or, Getting Back to the Wrong Nature," *Environmental History* 1.1 (1996): 7–28. Cf. Cronon, William, ed., *Uncommon Ground: Rethinking the Human Place in Nature* (New York: W.W. Norton & Co., 1995), 69–90, accessed December 28, 2014. http://www.williamcronon.net/writing/Trouble_with_Wilderness_Main.html.

his *Leaves of Grass*[5] (1855), and the works of Henry David Thoreau[6] (1850s) and Ralph Waldo Emerson (for example, *Nature*, 1836).[7] This 'realistic and religious' approach has spurred a long and fertile line of intellectual succession up to the present day, and many contemporary conservative politicians are reviving the words of these writers, often using them to underscore the 'Americanness' of certain viewpoints on the environmental question.

Although these 'realistic' approaches of rather 'conservative' and 'spiritual' character are similarly disputed and criticised, like the 'de-constructivist' ones, they have been identified by a considerable part of the US public with 'the' American mindset. Among other aspects, the non-constructivist view of nature implies a different attitude towards the environment than in Europe, where nature seems to have been 'culturalised', i.e. tamed and 'humanised' to the last leaf of grass, and where there is de facto no wilderness—and thus no 'real' nature—left. To many conservatives in the US, it seems that while in Europe humanity seems to have taken over nature completely—thus creating its own specific view of nature and the environment which are both in essence no longer perceived as 'natural', but as intrinsically 'human' in themselves, and thus rather as cultural constructs than objective facts—in the US there seems to be still a widespread perception that 'nature' is something in itself, non-human in essence and at the same time somehow—although mainly archaically—lying within the range of rather spiritual or religious rather than cultural appropriation.

Both these liberal ('leftist') and conservative ('rightist') perceptions have to some extent their 'natural' territories: the de-constructivist approach has its strongholds on the coastlines, the conservative one in the heartlands, which correspond to different lifestyles and their related ways of experience and perception. Furthermore, both approaches are often mixed in daily life (particularly that of the educated middle class) and have complex origins that relate specifically to the history of the country.

3   The 'New Continent' and Nature

As the first democratic nation, ahead of their European counterparts, the United States of America were founded in 1776 not so much in opposition to a

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5   Whitman, Henry Walt, *Leaves of Grass*, self-published first edition, 1855.
6   Thoreau, Henry David, *Poems of Nature*, published 1895.
7   Emerson, Ralph Waldo, *Nature* (Boston: James Munroe and Company, 1836), accessed December 28, 2014. https://archive.org/stream/naturemunroe00emerrich#page/n5/mode/2up.

flawed concept of society, but as a 'positive state' in an innovative, unprecedented unity between a pluralistic political arrangement in the service of the individual, an already fully functional capitalism and territorial expansion. Self-reliance and the "pursuit of happiness" were parts of the founding civil religion that entitle the individual to explore and expand into new spaces for his or her own benefit. These secular cultural pillars of the US were—and remain to the present day—mixed with elements of a traditional, Old Testamentary Christian anthropology which legitimatises the 'harvesting' of the earth by human beings—at least in the view of the believers, who in the present-day United States account for more than ninety percent of the population.[8] Although among these are ever more people who mix various religious forms,[9] and about a third who does not admit an Old Testamentary, 'rule-oriented' relation to nature and instead accepts the modern system of science and its findings on climate change (among them Evangelists, Jews, Buddhists, 'spiritual but not religious' types etc.), the influence of 'direct religion' on the perception of nature and the environment in the US can hardly be underestimated.

Another characteristic that unavoidably influences the perception of nature is indeed the sheer size and extent of the country. While in Europe space is perceived as rather restricted, the US still has large spaces with lots of wildlife, not least because parts of the country are inhospitable for human settlement—such as, for example, the great deserts. Among the 'classical' (myth-related) American experiences of nature is one of adventure, of (successful) fight and its closely related experience of "Going West", i.e. of exploring the unknown for personal and collective achievement and progress. The "American Dream" is about the individual attaining a decent personal living against all odds and through hard work, not least by *applying work onto nature*. With sustainability now on the forefront of the global discussion, but also with a new "Going West" potentially just a few decades ahead, i.e. the impending import of resources from space, felt as a much more imminent reality in the US than in Europe, concepts like 'limited resources' and 'the only lonely planet' are questioned by parts of the conservative elites, and by entrepreneurs—such as those united in the first private, US-based commercial spaceflight corporation, Space X Dragon, which successfully docked with the International Space station in

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8   Newport, Frank, "More than 9 in 10 Americans Continue to Believe in God," published by Gallup, June 3, 2011, accessed August 23, 2013. http://www.gallup.com/poll/147887/americans-continue-believe-god.aspx. Cf. The Pew Forum on Religion and Public Life, "U.S. Religious Landscape Survey 2007," accessed August 23, 2013. http://religions.pewforum.org/reports.

9   The Pew Forum on Religion and Public Life, "Many Americans Mix Multiple Faiths," published December 9, 2009, accessed August 23, 2013. http://www.pewforum.org/Other-Beliefs-and-Practices/Many-Americans-Mix-Multiple-Faiths.aspx.

May 2012—, and segments of the American public.[10] The envisaged expansion into space in the 21st century announced by the Obama Administration in April 2010 and repeatedly since[11] is perceived by parts of the American public as the contemporary repetition, and potential 'next level' of, the spirit of expansion into the Western territories and the Pacific, that characterised the history of the US in the 19th and 20th centuries.

All this makes the current American discussion about environment and nature more diversified than the European one. While, for example, resource and energy efficiency are widely accepted in the contemporary US by broad parts of the public, including radical conservatives, as in principle rational and progressive, the discourse of emergency that has taken grip on the environmental question mainly in Europe, but also in some other parts of the Western hemisphere such as Australia or New Zealand, is widely (and instinctively) rejected, since there is the conviction—conscious and unconscious—that starting in the near future, there will be positive opportunities to access 'new frontiers to cross', not least by the use of new technologies, many of them conceived and developed in the US. The idea behind this line of reasoning is a more optimistic, less gloomy perception of climate change in the US than in Europe: that the historical experience of "frontier life" could become once again a key cultural trend in the years ahead.

In fact, in the eyes of some US conservatives and the high-technology community, humanity, with its potential expansion into space, may *first* solve the population problem; *second*, outsource problematic technologies like atomic energy without giving them up as a historic human achievement; and *third*, start to rely upon resources imported from space, thus solving the scarcity and limited resources problem. For example, the governmental tasks imposed on the National Aeronautics and Space Administration (NASA) by the Obama Administration up to 2030—i.e. to start to concretely explore the surrounding

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10   Jones, Jeffrey M., "In US, Concerns About Global Warming Stable at Lower Levels," published by *Gallup*, March 14, 2011, accessed August 23, 2013. http://www.gallup.com/poll/146606/Concerns-Global-Warming-Stable-Lower-Levels.aspx. Cf. GreenBiz, "Americans' Concern for Climate Change Drops as Temps Rise," published March 18, 2011, accessed August 23, 2013. http://www.greenbiz.com/news/2011/03/18/americans-concern-climate-change-drops-temps-rise.

11   Spillius, Alex, "Barack Obama: 'We Will Reach Mars in My Lifetime.' Barack Obama Has Outlined Plans to Send Astronauts to Orbit Mars by the Mid-2030s, Followed by an Eventual Landing On the Planet," *The Telegraph*, 15 April 2010, accessed December 28, 2014. http://www.telegraph.co.uk/news/science/space/7595810/Barack-Obama-we-will-reach-Mars-in-my-lifetime.html.

space with manned missions[12]—pave the way to a renewal of the scarcity and 'limited planet' argument in the domestic environmental discussion in the United States.

Taken together, and paradigmatically speaking, the rather negative discourse pattern of 'environmental distress' and 'global warming' that dominates the European paradigm is partly replaced in Obama's 'Post-American World' US[13] by a new idealism, related to the combination of a) the traditional 'positivism' of Crossing Borders, and b) some of the most avant-garde technological developments underway.

Overall development is related more or less consciously by the current American elites to the 'expanding individuality' topic that is driving forward crucial transnational and transcultural issues of the present phase of globalisation. Among them are questions such as the value and role of personal achievement, cultural individualism, or the seemingly universal advance of personal versus collective rights, including its bases in Western human rights.[14] All these developments influence the US discussion on nature and the environmental question both in a domestic and in a global view.

4   Towards a Growing Polarisation within the US Population?

Overall, as with the rest of current US society, there seems to be a growing ideological polarisation (as stated by Francis Fukuyama[15]) among the population with regard to the next steps needed to solve environmental questions. A minority of Democrats and liberals tend to cling to the classical post-modern paradigms of deconstructing the economic growth myth and to take concrete policy steps against global warming and climate change by changing the lifestyles of the US population and reducing consumption. In contrast, the vast majority of Republicans and conservatives tend to more or less radically sustain the new promise of growth, as in the 'import of resources from space'; a

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12   Atkinson, Nancy, "Obama Wants Mission to Asteroid by 2025, Mars by Mid-2030's," *Universe Today*, April 15, 2010, accessed December 28, 2014. http://www.universetoday. com/62766/obama-wants-mission-to-asteroid-by-2025-mars-by-mid-2030s/. Cf. the full text of Obama's speech: The White House Office of the Press Secretary, "Remarks by the President on Space Exploration in the 21st Century" (John F. Kennedy Space Center, Merritt Island, Florida, April 15, 2010), accessed December 28, 2014. http://www.nasa.gov/ news/media/trans/obama_ksc_trans.html.

13   Zakaria, Fareed, *The Post-American World* (New York: W.W. Norton & Company, 2008).

14   Jacques, Martin, *When China Rules the World: The End of the Western World and the Birth of a New Global Order* (New York: Penguin Books, 2012).

15   Fukuyama, "American Political Dysfunction."

'you do not need to change your way of life, because technology will improve things' ideology; and slogans to the effect of "it's just a matter of time until we will have clean technologies, so we go on as we are rather than change".

It is important to once again notice in this regard that most Democrats and liberals in the US live on the coastlines, experiencing limitedness (or what French fore-thinker of 'Postmodernism' Jean-Francois Lyotard called "the Pacific wall"[16], i.e. the natural limits of expansion). In contrast, most Republicans and conservatives predominantly live in the central heartlands and the Southern Bible belt, with their seemingly infinite spaces (including grass spaces and deserts) and large portions of land (seemingly) untouched. That constitutes widely different experiences and respective judgments.

One resulting question in the current situation of 'mixed feelings' in the US is whether the most recent environmental catastrophes may have impacted this overall mindset constellation or not; and if yes, in which ways exactly, to what extent, and, most importantly, how enduring their impact may be.[17] Among these catastrophes is the oil spill in the Gulf of Mexico in 2010—not to forget, the worst such catastrophe in history; the unusually strong and extended wildfires in Colorado in 2012; and the seemingly unprecedented frequency of hurricanes and tornadoes that hit Northern America during the last decade, also ascribed in part to global warming, environmental erosion and climate change. There are, for example, the two tornadoes that hit New York City simultaneously on September 9, 2012, delaying the US Open tennis tournament and driving thousands into panic; or Hurricane Sandy, which devastated the same area at the end of October 2012. The more important question, though, is whether such signal events extensively reported in the media, may change social psychology and contextual politics in the US not only in a short-term, but also in a long-term perspective—and thus towards systemic sustainability instead of limited case-by-case treatment.

5   The New "G-2" Powers of the US and China: Two Different 'Pacific' Forms of Environmental Pragmatism?

A dramatic, rapid change in the mindsets of the larger part of the American population under the influence of increasingly numerous environmental

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16   Lyotard, Jean-Francois, *Pacific Wall* (Venice: Lapis Press, 1990).

17   Benedikter, Roland, "Öl und Bewußtseinswandel: Amerika nach der Ölkatastrophe im Golf von Mexiko," *Berliner Debatte Initial. Zeitschrift für sozialwissenschaftlichen Diskurs. Schwerpunktheft: „Sozial und ökologisch,"* herausgegeben von der Gesellschaft für sozialwissenschaftliche Forschung und Publizistik Berlin, 22.1 (2011): 112–125.

catastrophes is possible, but still unlikely, notwithstanding the (though partly half-hearted) efforts of the Obama administration since January 2009 to increase awareness.

One reason for this is *pragmatism*—another core cultural characteristic of the US. As the former Director of the United Nations Institute for Technological and Scientific Innovation, Ernst Ulrich von Weizsäcker, stated, both the new "G-2" powers US and China thrive,[18] unlike Europe, on the bases of a deep-rooted culture of environmental pragmatism. Weizsäcker advised the Chinese government with regard to its twelfth Five-Year Plan, which started in March 2011 and included, among other measures, an ecology framework for the Chinese taxation system, massive investment into green and sustainable technologies and the relegation of the old Chinese resource-intensive heavy industry to Laos and Vietnam.

While both the US and China up to the present day are still resource-intensive civilisations inclined to a rather 'consumptive' attitude in land use due not least to the size of their geographical extents, one difference in the culturo-historical mindsets is that the US history is a history of capitalism, while post-war China has taken over aspects of capitalism only for three decades. That makes a difference in how capitalism as a cultural practice shapes the general perception of nature and the environment, and of their place in society within the concepts and myths of what 'a good life' is and should be.

This is not least because American culture has been born—in its crucial, collective founding myth and constitutive, identity-forming passage "from colony to superpower",[19] as a culture of debt—or, to put it in more exact terms, as a culture of the anticipation of future(s) by the means of developmental consumption of the present. If the early capitalism that shaped the origins of modernity gave birth to industrialisation and developed towards efficient mass production on the British Isles in the 18th and 19th centuries, the form of capitalism that dominated the 20th century, thus shaping the modern social and cultural mindset of the US was Fordism. Fordism was—and remains—*the* specific American invention of capitalism as applied to production. It was not and is not possible without a resource-intensive, resource-consumptive and resource-expansive cultural mindset. In many ways, Fordism was and remains in its essentials the embodiment of the American Dream as conveyed through

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18   Bergsten, C. Fred, "A Partnership of Equals: How Washington Should Respond to China's Economic Challenge," *Foreign Affairs* July/August (2008), accessed August 23, 2013. http://www.foreignaffairs.com/articles/64448/c-fred-bergsten-a-partnership-of-equals.

19   Herring, George C., *From Colony to Superpower: US Foreign Relations since 1776.* (New York: Oxford University Press 2011).

the specific practices of economic production, distribution and consumption within the principles of capitalism. As such, it influenced the (mostly subconscious) American awareness of nature and the environment up to the present day.

6   A Structural Cornerstone: Fordism, or, the Specifics of American Pragmatism. The 'American Dream' Put into Industrial Practice— and the Effects on the View of the Environment

As scholars such as Julian Holland,[20] David Gartman[21] or Robert J. Antonio and Alessando Bonanno[22] have shown, Fordism is, and continues to be, the specific 'cultural' way of American capitalism, and the origin of a resulting broader public mindset that influences perspectives on climate change and the environment. But how did it originate, and to what extent has it spread?

As German scholar Elmar Altvater has pointed out, the economy and (social) ecology of Fordism was brought about in the US after World War I by Henry Ford. It was later exported to become a "global way of production",[23] but it affected the public mindset nowhere so profoundly as in its motherland—particularly with regard to questions of nature and the environment.

Based on the perfection of the division of labour, a focus on production efficiency, work discipline, technological innovation, improved work conditions, increased wages and the systemic expansion of outer markets, Fordism aimed at increased productivity and profit not only by letting workers participate in the resulting benefits like no previous capitalistic model, but also by rationalising the mechanisms of transport of incoming and outgoing goods and—most important of all—the automatisation of the consumption of resources and

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20   Holland, Julian, "Fordism/Post-Fordism," published by Globalization and Autonomy Glossary, May 06, 2005, accessed August 23, 2013. http://globalautonomy.ca/global1/servlet/Glossarypdf?id=CO.0021.

21   Gartman, David, "Postmodernism; Or: The Cultural Logic of Post-Fordism?" published by University of Victoria Webpages, 2008, accessed August 23, 2013. http://web.uvic.ca/~jlutz/courses/hist317/pdfs/PDF%20on%20Fordism%20%26%20Post-Fordism.pdf.

22   Antonio, Robert J., and Alessandro Bonanno, "A New Global Capitalism? From 'Americanism and Fordism' to 'Americanization-Globalization'," *American Studies* 41.2/3 (2000): 33–77, accessed August 23, 2013. https://journals.ku.edu/index.php/amerstud/article/viewFile/3102/3061.

23   Cf. the exemplary treaty: Altvater, Elmar, "Zur Ökonomie und Ökologie der Nord-Süd-Beziehungen," in *Handbuch der Dritten Welt, Band 1: Grundprobleme—Theorien—Strategien*, ed. Nohlen, Dieter and Franz Nuscheler (Bonn: Dietz, 1993), 398–419.

energy. For the first time in history, more attention was put on the mechanisation and acceleration of the resource and energy input than on the product output in the strict sense; and this resulted in a revolutionary new balance between resource input, product output and production 'throughput'.[24] This had tremendous effects for the overall place of mechanised industry and production in society and nature *far beyond the places of production*; the greater periphery and surroundings of both the social and the natural worlds were now conceived as being a constitutive, 'integrated' systemic part of the production process, in principle of equal importance to the manufacturing mechanisms. That means *that nature became an automatised core part of the industrial process*, and that it was perceived as a means to facilitate that process—not as something in itself or something 'different' from the social realm.

As an effect, resources, environment and nature were seen as functional factors in a complex, all-embracing network of production and distribution, inserted in the greater machine of societal 'wealth creation' that was no longer restricted to the factories and in the collection and distribution networks (trade), but impacted everything without exception. While early forms of capitalism were already centred on access to and extraction of the cheapest possible natural resources, the accompanying industrialisation of agriculture (dedicated in similar ways to mechanisation, acceleration and price reduction in the service of the greater, complexly interrelated mechanism of production) and fossil fuel consumption instead of 'biological' energy, Fordism became the first system of production to include all these factors into one and the same process by actively managing their systemic interactions and by strategically influencing the development of all single fields. This was implemented on the basis of the view that no longer just 'segment-based' but rather 'systemic' productivity in the service of the greater good was going to be the future of modern societies. In the framework of the rise of fossil fuel energy to the dominant resource indispensable for industrial progress, nature became a full part of the production process—more than ever before. The current 'fracking' (hydraulic fracturing) practice of extracting oil in the US, which since 2012 has led to a new oil boom, is a highly nature-depleting and environmentally 'harm-intensive' practice which is in many ways a direct consequence of the primordial Fordist mindset.

24   Daly, Herman E., *Steady-State Economics* (Washington, D.C.: Island Press 1991), 195.

7   **Results of Fordism in American Culture: Relativising the 'Value' of Natural Resources**

As a result of Fordism, the outreach of the production process for raw materials and energy did not stop at regional or national borders, but expanded 'logically' into international areas—for example influencing the extraction of oil abroad seen from a systemic viewpoint as part of the domestic production process, including work organisations and wages abroad as well as the overarching trade rules, the national and international price regime and the accompanying political conditions. More importantly, Fordism had to do everything on a strategic level to reduce the costs of the very bases of the overall process: the price of natural resources and energy.

While every earlier form of capitalism dealt with this problem to a degree, Fordism for the first time transformed the input of resources and thus the use of nature and the environment into mere functional factors of productivity, lowering the prices for natural goods dramatically, instilling a mindset of consumption of nature in the service of the greater societal good conceived in itself as 'natural' with regard to modernity and wealth. The strategic impact of Fordism on national and, more importantly, on international resource prices and thus indirectly on the concept of nature and environment became not only one factor among others, but an indispensable prerequisite and thus a core element of the success of the Fordist industrial model as such.

In other words: treating nature as a disposable element of merely utilitarian rather than intrinsic value for the furtherance of human goals had to become the 'natural' mindset of a fully functional 'Fordistic' society. To many it seemed to coincide perfectly with the American Dream, denoted as an individual expansion into the still non-human, i.e. as conquering 'unknown spaces' or 'wilderness' 'against all odds' with the goal of wealth creation, individual expression and personal and collective transformation. In many ways, the unprecedented mobilisation of natural resources both in the form of materials and energy that Fordism started for sake of increasing productivity on a greater, systemic level both in the US and internationally were accepted by broader parts of the American public (both liberals and conservatives) as being part of the 'quintessential' "American Way of Life", i.e. seen as the American Dream put into industrial and modern life practice. The result was a view in which nature and the environment were in essence seen not as values in themselves, but rather as functional parts of human disposal.

In the end, 'hyper-modern' Fordism ironically triggered a modern variant of the Old Testamentary expression "Man must harvest", which has indeed become a mantra of present-day Republican attitudes in response to warnings on

man-made climate change and global warming. It is obvious that there is a stark contradiction inbuilt in this alleged 'integration' of processes of rationalisation, for which Fordism in essence stands, and its Old Testamentary interpretation and ideological application, as parts of the right-wing American votership want to perceive it as both a modern and traditional overall principle of good development.

8   The Resulting Paradox Implicit in the Current US Discussion on Nature and Environment: Ambivalence of Attitudes

There is a variety of consequences of these 'cultural' implications and effects of Fordism on the environmental question, as combined with lifestyles and identity myths. These consequences impact US views on nature and its relation to culture up to the present day, from the liberal to conservative. The resulting attitudes are in the majority (productively) ambivalent.

First of all, American views of nature and the environment tend to be 'naturally' (geo-)politically denoted—much more than in 'idealistic' Europe. This is because Fordism is expansive in nature, and it thus must include spaces even greater than American soil. In turn, global affairs are 'naturally' related to domestic issues, in particular to mythological 'grand narratives' of American lifestyle and identity. President George H.W. Bush's statement at the so-called Earth Summit in Rio de Janeiro 1992 that binding agreements on the protection of the environment were not in the interest of the United States, "because the American way of life is not negotiable", was symptomatic because of this denotation.[25] The Republican view of the relation between the global environment and the "American Way of Life" is one 'cultural' effect of Fordism combined with a specific interpretation of local founding myths.

As a result, issues such as the environment or renewable energies are still in many ways perceived as a 'progressive' factor in 'old-style' geo-strategic power plays. To give just one example: Former Secretary of State George Shultz's promotion of renewable automotive energies at Stanford University in 2012. On

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25   Vidal, John, "Rio+20: Earth Summit Dawns with Stormier Clouds than in 1992," *The Guardian London,* June 19, 2012, accessed August 23, 2013. http://www.guardian.co.uk/environment/2012/jun/19/rio-20-earth-summit-1992-2012. Cf. Drexhage, John and Deborah Murphy, *Sustainable Development: From Brundtland to Rio 2012,* published by the United Nations, September 2010, accessed August 23, 2013. http://www.un.org/wcm/webdav/site/climatechange/shared/gsp/docs/GSP1-6_Background%20on%20Sustainable%20Devt.pdf.

that occasion, Shultz's talk about solar-powered cars symptomatically asserted that regional and local promotion of US-based renewable energies was a geo-political act aimed, through reducing oil dependency, at former Iranian prime minister Mahmoud Ahmadinejad: "Hey Ahmadinejad, we have lots of sun in California, we don't need your oil anymore to have a very good and wealthy life! What do you say now?"[26]

On the one hand, the singular importance of the "American Way of Life" for the human-nature relationship in the US is once again illustrated here. For the US, the history of immigration, colonialisation and the "pursuit of happiness" remains indelibly tied to the sensation of liberation from fixed spatial borders and their replacement by "Open Frontiers" that inspired the first European settlers. Whenever space, including nature, became restricted or limited, the settlers were able to move West, thus moving beyond any given conditions and limitations of resource consumption and land use. That created a mindset for which limits of energy or resource consumption in the sense of stable, binding agreements were not primarily considered, at least not as crucial, or are even perceived as (unnecessarily) restricting. The implicit American understanding of the notion of 'Freedom' embodied in the "American Way of Life" with regard to mobility, housing, including the notion of Home, etc. relies to the present day on notions of unlimitedness and "Open Spaces". Energy use is much more perceived in connection with forward-orientation and progress, i.e., as a problem, for example, of replacement of old, nature- and energy-consumptive technologies through others, more efficient and resource-saving, than as a problem of self-restriction, limitation, binding commitments and a related change of lifestyles. Clean technology that solves the environmental problem is, for most US citizens, a problem of time, not of space; and so also is, for many, the problem of climate change and global warming as a whole. For instance, previous American administrations, including the George W. Bush. Administration (2001–2009), refused most binding agreements on climate change, putting their efforts instead on the rapid development of more advanced technologies that would solve environmental problems in the 'natural' course of civilisational evolution.

On the other hand, the interface between modern American mythology (the legacy of Fordism as an ideology of progress through merging technology and nature) and globalisation has recently become more complex, and thus more ambivalent. Oil in the Obama era is in the meantime not only

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26   Golden, Mark, and Mark Shwartz, "Stanford's George Shultz on Energy: It's Personal," *Stanford Report*, July 12, 2012, accessed August 23, 2013. http://news.stanford.edu/news/2012/july/george-shultz-energy-071212.html.

domestically, but also in its geopolitical implications, rather seen as 'other of us', i.e as an increasing threat, because of the growing pragmatic insight of broader parts of the American public that oil dependency has to be reduced in order to fix the economy and the national debt, independent of the apparent success of fracking. But at the same time there seems to be an often undervalued anxiety in the US with regard to the foreseeable end of oil as the key resource in the world. Why does this anxiety exist? Because the US dollar depends in its value on its geopolitical role as a world reserve currency; and this role has been dependent to a large extent on the fact that the global key resource, fossil fuel, was traded exclusively in US dollars. The US dollar and the global resource (oil) business as expressions of 'old' nature consumption had sustained each other decisively since the 1970s. With the approaching end of oil in a couple of decades' time, the epoch of global dollar supremacy could also come to its end. This could change many things both internationally and domestically, as not only US presidential candidate 2012 Ron Paul has pointed out in his speech "The End of Dollar Hegemony" of 2006.[27]

Nevertheless, the US is clearly still not sufficiently preparing for the rise of this new constellation—which could potentially be also a new era in the relation between economy, power politics and resources, i.e. the environment. On the contrary, up to the end of the George W. Bush era in January 2009, the US government seemed to be trying to stabilise the situation without much innovational drive. But signals like the 'basket of currencies' proposal for trading key resources in the twenty-first century brought forward by China since 2010, are indications of the direction in which things may evolve.[28] As with the Shultz example, America is well advised to take the end of global oil as the end of a phase of its own development—and replace it early on with new key approaches to resources, for example with strategic resource partnerships based on the idea of sustainability.[29]

27   Paul, Ron, "The End of Dollar Hegemony," (speech made before the US House of Representatives, Washington D.C., February 15, 2006), accessed August 23, 2013. http://www.lewrockwell.com/paul/paul303.html. Free video version: "The End of Dollar Hegemony," accessed August 23, 2013. http://archive.lewrockwell.com/paul/paul303.html.

28   Mcdonald, Joe, "China Calls for New Global Currency," USA Today, n.d., accessed December 28, 2014. http://abcnews.go.com/Business/story?id=7168919.

29   Paul, "The End of Dollar Hegemony."

9   An Intense Debate

Taken together, this complex constellation has caused intense domestic debate. Because of the huge amount of money involved, and because indirectly tied to the (in essence wrong) 'Decline of America' mentality that has haunted the nation since 9/11, this debate has increasingly been fought with stubbornness on all sides involved, be they liberals or conservatives, Democrats or Republicans. The resulting *domestic* political rifts with regard to climate change, nature and environment are myriad in the US under President Obama. They partly generate extremes, at least as perceived from the outside of the political game. Presidential candidate "Mitt" Romney's dictum in the 2011–2012 presidential election campaign that renewable energy is a bad idea and cannot be put into practice because "you can't drive a car with a windmill on it"[30] was one of the more extravagant arguments. This echoed the Tea Party movement's conviction that it is already 'socialist' just to think of the environment as a common good to protect, or even as one subject to human rights—being, in their view, the reason why every such attempt had to be prevented.

At the same time, Barack Obama's administration, which seems to be in principle convinced about the necessity of taking active and innovative steps, has featured as many achievements as shortfalls since its start on January 20, 2009. Among the achievements is noticeable progress in selected fields like solar energy and resource efficiency. But there are also spectacular shortfalls, like the immediate "return to business as usual" with regard to "high risk" open sea oil drilling in the Gulf of Mexico, just months after the end of the oil spill in 2010, under more or less unaltered conditions;[31] the fracking offensive at the expense of the environment since 2012; and the absence of a serious will to compromise in the Obama Administration in forming binding international agreements. The refusal of the US to agree to international emission reduction programs and to a detailed final declaration on the global environment at the Rio Global Summit of 2012 once again showed that when it comes to nature and the environment, Obama remains much more 'Fordistic' than Europeans, and acts more like a 'traditional American' than the global citizen he tries to be.

It seems today that Obama's environmental agenda has been overestimated by many of his followers, not to speak of his European partners. Obama's views

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30   Holland, Steve, and Jeff Mason, "Romney, Obama in Rare Battle over Energy Policy," *Reuters*, August 14, 2012, accessed August 23, 2013. http://www.reuters.com/article/2012/08/14/us-usa-campaign-idUSBRE87B0J820120814.

31   Cf. Benedikter, "Öl und Bewusstseinswandel."

on climate change and the environment seem to be structured so dialectically, i.e. ambiguous and (sometimes productively, often destructively) contradictory, that shortly before the end of the Obama era in January 2017, the man who considered himself (and was considered in Europe) as one of the most (nationally and globally) environment-conscious, -protective and -friendly US presidents for many years, not much has been achieved. And the outlook beyond Obama's tenure is insecure. Let us not forget on this occasion that Jimmy Carter, President of the United States from 1977 to 1981, had already installed solar panels on the roof of the White House, which had been later (programmatically) removed by his successor Ronald Reagan (President of the United States from 1981 to 1989). What happened to Obama's environmental idealism?

As far as can be perceived today, the Obama Administration initially vowed to actively change the general perception of the American public on climate change and the environment, but has progressively lost touch because of other, apparently more pressing issues. Since the end of Obama's first term in 2012, the environmental agenda seems to be an endeavour that, even if euphemistic terms are applied, is in the best case at third- or fourth-way along if measured by its own initial ambitions—if it has not in fact been silently given up in the meantime by its proponents due to its poor chances of success in an increasingly short-term oriented and populist US media landscape influenced by unprecedented ideological polarisation in Washington and beyond.

So why did Obama fail to make the socio-psychological perception of environmental and resource-consumption change a success? Because he has failed to keep the topic out of the general ideological polarisation of the US since 2008.[32] This divide and its implications on climate change and the environment has been mirrored by A.J. Hoffmann.[33] As Hoffmann pointed out, the environmental question has become part of this polarisation, and it is intensely used politically within the respective power games. Second, the issue of climate change seems to be considered as too controversial and too negative in the Obama Administration's perception of a large part of the voter population, and thus as too dangerous to be addressed in view of the upcoming presidential elections of 2016 where Obama's efforts must be to support the success of the Democratic Party in order to safeguard his own image in history. Something similar was the case in the mid-term election campaign of November 2010, when the topic suddenly disappeared from the public agenda of the Democrats, and was left almost defencelessly to Republican counter-propaganda. And it was again the case starting in 2012 with the presidential

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32   Fukuyama, "American Political Dysfunction."

33   Hoffmann, "The Growing Climate Divide."

re-election campaign management of Obama, who considered it a classical 'loser topic' better to not be addressed by the acting president.

Not least due to the specifics of the US election process, it seems unlikely that these examples will be the last ones to prove that the topic is all too often removed on the basis of rather daily and immediate political judgments and interests which are, in their majority, pre-eminently domestic and neither international nor global, as the topic by its own nature would require.

10   Differentiating, Separating, Dividing the Environmental Question

Despite all their sharp (and in part seemingly irreconcilable) differences, in the end, both Democrats and Republicans in their majorities seem to be, at least in general, 'cultural Fordists'. As a consequence, both parties today tend to differentiate, separate, even divide *four basic concepts* usually seen as a unity in Europe: 1) Resource efficiency; 2) green technology; 3) green economy (green jobs) and 4) sustainability. The respective US trend goes:

- On the one hand, resource efficiency and green technology: *yes*. There is a broad acceptance throughout those of various political stripes and ideologies, because it is obvious from a pragmatic viewpoint that to drive twice as many miles with the same amount of fuel is cheaper and thus desirable, and that renewable energies generated through clean and more advanced technology is progress.
- On the other hand, sustainability and green economy: *no*. The rejection is similarly broad because 'development' in the US perception is not about keeping 'the same' over time by making it more durable (which is implicit in 'sustainability'), but to innovate, i.e. to exchange and improve tools and means (for example, Americans change houses much more frequently compared to Europeans). Green jobs are seen not as job creators, but rather job transformers, and in the best case as job maintainers. As recent studies have shown, green jobs are perceived as partly threatening and badly paid; as often worse than their reputation; and they in general do not reduce the number of the unemployed, but rather change traditional

employment, thus contributing to stabilise employment numbers particularly in the technology and services industries.[34]

The effect is that a good portion of the American public does not believe in the *structural unity* of 'green', 'efficient' and 'sustainable'—a view that in contrast constitutes a basic conviction in the current European Union. Nature, seemingly 'waiting' for the settlers in the New World, was perceived as part of a great transformative process—like the migration from the 'old' into the 'new' world was. To create a new life, nature was 'integrated' without hesitation and without question in the idea of a general movement from the old to the new. It became part of the American Dream, 'towards something else', a tool to be handled by the settlers on their way to create a whole new civilisation through and with the help (i.e. use) of nature.

In this sense, nature became a core part of the identity-building term "innovation", in the American sense, from early on. Innovation in the US is much more a civil–religious concept than a *terminus technicus* like in Europe. For the US, innovation is at the core of American culture and identity itself, a transformative process towards the better. Nature and the environment were perceived from the start as parts of it, as its necessary bases. This civilisational grounding of the 'integration' of nature into the concept of 'innovation' as part of US identity favoured the later birth of Fordism.

All that of course does not mean that nature was—or is—something totally different for Americans than for Europeans. But it certainly means that nature, or, in newer terms, 'the environment', in the American view has to be used for something useful in the future. It has—in principle, and according to broader 'cultural' convictions—not to be saved for its own sake, like in some social habits of Europe dating from the 18th century, as in the example of the English garden. The great national parks of the US, among the most spatially extensive in the world, do not necessarily support a counter-argument against such cultural difference.

In addition—and as an effect of all this—there are some interesting paradoxes in place between European and American perceptions of nature and the

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34   Bauer, Franziska, "Green Jobs keine Lösung für Arbeitsmarktkrise," *Der Standard Wien*, October 03, 2012, 20, accessed August 23, 2013. http://derstandard.at/1348284725531/ Arbeiterkammer-warnt-vor-Green-Jobs. Cf. the original study of the Institute for Higher Studies (IHS), Vienna: Leitner, Andrea and Angela Wroblewski and Beate Littig, "Green Jobs: Arbeitsbedingungen und Beschäftigungspotentiale," published by Arbeiterkammer Wien, October 02, 2102, accessed August 23, 2013. http://media.arbeiterkammer.at/wien/ IzUmweltpolitik_Ausgabe_186.pdf.

environment: 'cultural landscape' (the concept of *Kulturlandschaft*), prevailing in (Central) Europe against 'natural landscape' ('wilderness'), which is still important in the US. A similar conceptual difference is the one between the European 'living world' (*Lebenswelt*) and the American 'world to live in'. The two concepts offer a perfect example of cultural differentiation between Europe and the US. While the first, the European 'living world' is centred on the integration of 'living' amid the 'world', understood as an (in principle already existing!) environment where human beings may live in harmony with given conditions—also at the price of self-restriction, if needed—the second, American notion of 'world to live in' is rather oriented towards the civilisational creation of an environment where human beings can live according to their own principles. And with that difference, whole different worlds of environmental perspectives are created.

In other words: While in the US, typologically speaking, the concept of 'nature' still prevails over the concept of 'the environment', it is the opposite in Europe. This paradox of course triggers some questions: Is the European term of 'environment', currently filled with rather negative connotations like loss, destruction, and catastrophe, in the end even less constructive and more artificial than the 'positive' American one of 'nature'? These questions may become part of the general future discussion within the transatlantic relationship.[35]

11   Causes of Contemporary American Dialectics: Why is Climate Change so Controversial in the United States? Four Reasons to Consider

Taking these elements together, and overlooking the particularity of the situation, it may still be asked: Why is climate change so controversial in the contemporary United States? Without including the many (and complex) side aspects, there may be *four* main reasons to be taken primarily into consideration.

35   Schreurs, Miranda A., Henrik Selin, and Stacy D. van Deveer, "Expanding Transatlantic Relations: Implications for Environment and Energy Politics," published in: *Transatlantic Environment and Energy Politics: Comparative and International Perspectives*, Ashgate University Press, 2009, accessed August 23, 2013. http://www.ashgate.com/pdf/sample pages/transatlantic_environment_and_energy_politics_ch1.pdf.

11.1 *Industry Support for Denial*

The US Fossil Fuel Energy Lobby continues to fund debate and uncertainty in the public dialogue about climate change. With large financial backing, even ideas that are false and have been debunked can be pushed forward on the general public. A key reference for the respective procedures and tricks is Naomi Oreskes' and Eric Conway's book *Merchants of Doubt*.[36]

Part of this is that the science of climate change has been intensely studied for a number of decades, yet there remains confusion and even mistrust among the American public regarding the primary scientific conclusions. In particular, the widely held scientific consensus that human activities are largely responsible for the observed warming of the last half century[37] is widely contested in the US. In fact, over the last decade as the evidence linking human activities with the climate has become overwhelming, the debate in the US has not decreased, but intensified. The Intergovernmental Panel on Climate Change (IPCC) Report 2007 has become a core source of that development.[38] This public disconnect is not unique to the issue of climate change, but is apparent in past debates about science and US environmental policy in general.

Although according to the "planetary boundaries" theory of Johan Rockström et al., the loss of biodiversity and the change of the global nitrogen cycle may be more important,[39] one of the other most significant environmental issues of our era outside of climate change from an empirical view seems to be the depletion of the ozone layer. The ozone layer is a critical part of the Earth's life support system since it filters out high-energy radiation from the sun, thereby allowing plants, animals and humans to live on the surface of the earth. With even small reductions in the ozone layer, the potential for increased rates of sun-borne diseases such as skin cancer and cataracts is proven and significant.

In the 1970s, concern about the unintentional depletion of the ozone layer surfaced after a fleet of high-speed aircraft (i.e. the Concorde) was proposed.

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36   Oreskes, Naomi, and Erik M. Conway, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming* (New York: Bloomsbury Press, 2010).

37   Doran, Peter T., and Maggie Kendall Zimmerman, "Examining the Scientific Consensus on Climate Change," *EOS Transactions American Geophysical Union* 90.3 (2009): 22–23, accessed August 23, 2013. http://tigger.uic.edu/~pdoran/012009_Doran_final.pdf.

38   Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: The Physical Science Basis*, ed. S. Solomon et al. (Cambridge, New York: Cambridge University Press, 2007).

39   Rockström, Johan et al., "Planetary Boundaries: Exploring the Safe Operating Space for Humanity," *Ecology and Society* 14.2 (2009): 32.

The planes' flight path in the upper atmosphere, where the ozone layer is most concentrated, sparked concern in the US about the aircraft-emitted chemicals and their reaction with ozone. The proposed fleet of aircraft was put on hold while an environmental review was conducted to understand how ozone levels would change if a few hundred to a few thousand planes were flying in the ozone layer. Initial scientific studies found that modest ozone losses could be expected and the fleet of aircraft was further delayed.[40] In 1985, the discovery of a hole in the ozone layer over Antarctica intensified concerns about the state of the ozone layer and the role of human activities.

The international scientific community was quick to focus its attention on the ozone layer and the causes of the observed declines. After initial speculation as to the primary cause, a series of aircraft and laboratory studies identified that a class of chemicals, chlorofloucarbons (CFCs), entirely manufactured by humans, was the key ingredient responsible for the ozone hole. From a scientific standpoint, within a decade of discovery of the ozone hole, it was well established that CFCs were the primary cause of the observed losses in ozone.[41]

Despite the evidence linking human activities with ozone depletion, a loud and vocal opposition to the scientific consensus emerged in the US. A number of alternative hypotheses or apparent contradictions emerged that were shared and repeated often, including, for example, 'CFCs are too heavy to reach the stratosphere'. Although scientists were able to counter each of these statements (CFCs were regularly measured in the upper atmosphere and although CFCs are heavy molecules, strong atmospheric motions are sufficient to lift these chemicals into the upper atmosphere), US individuals and groups with a competing economic agenda repeated these arguments often, stoking public scepticism.[42]

As debate about the science continued, a number of factors shaped US public discourse and ultimately policy. In particular, opposition to the science appeared to fade relatively quickly. Although scientists supported by industry

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40   World Meteorological Organization/United Nations Environmental Programme. "WMO Global Ozone Research and Monitoring Project—Report No. 25. Scientific Assessment of Ozone Depletion: 1991," accessed March 14, 2014. http://www.esrl.noaa.gov/csd/asses sents/ozone/1991/report.html.

41   World Meteorological Organization/United Nations Environmental Programme. "WMO Global Ozone Research and Monitoring Project—Report No. 37. Scientific Assessment of Ozone Depletion: 1994," accessed March 14, 2014. http://www.esrl.noaa.gov/csd/assess ments/ozone/1994/chapters/contentsprefaceexecutivesummary.pdf.

42   See, for example: Maduro, Rogelio A., and Ralf Schauerhammer, "The Holes in the Ozone Scare: The Scientific Evidence That the Sky Isn't Falling," Washington, D.C.: Twenty First Century Science, 1992.

initially challenged the connection to human-produced chemicals, after a few years even research funded by DuPont (who produced a large fraction of the CFCs) publically confirmed the scientific consensus. So despite some lingering disagreement to the established science, industry opposition languished. One of the possible reasons for industry's ultimate support of the science and suggested policy was the discovery of ozone-friendly chemicals to replace CFCs that satisfied market demand previously met by ozone-depleting chemicals. Further, the prospect of changing over from CFCs to more ozone-friendly chemicals did not require large adjustments from chemical companies, other business or the US public. The policy implications of reducing the chemicals that destroy ozone were only marginally noticed by most people in the US, and not associated with any meaningful change in most markets.

Parallels exist between the issue of ozone depletion and other environmental and health issues in the US. As research confirmed the connection between acid rain and coal-fired power plants, industry supported contrarian science and advocacy countering mainstream science. And more famously, when science confirmed the link between smoking and various forms of cancer, various US organisations supported by tobacco companies countered mainstream science through various advocacy strategies. This pattern of countering the claims of science, with tangible policy implications, appears strongest in America (as in most other nations) when the potential economic impacts are most significant for industry. In the contemporary case of climate change, the policy implications for reducing heat-trapping gases will directly affect many industries, especially those invested in energy production. These industries are among the wealthiest in the world and have a strong motivation to protect their business interests.

11.2   *Climate Science is Complex—Especially in an Increasingly Populistic US Culture*

The science of climate change is complex and hard for the public to understand. A clever climate sceptic with a science background can often convince a layperson that humans cannot be responsible for climate change with various strategies of argument.

The science of climate change has been an active area of research for many decades. Much of the early work was focused on understanding past climates and the physical processes responsible for those climates. The foundation for understanding the mechanisms responsible for these types of changes is 'naturally' complex. Identifying how the climate has changed over thousands (or millions) of years presents various challenges, including establishing a reliable observational record (i.e. from tree rings, ice cores and geologic indicators) and

identifying the primary physical mechanisms to explain those observations. As in many sciences, the evolution of understanding has led to an awareness of the complexity within each element of the climate system (i.e. the atmosphere, ocean, land surface etc.) and their interactions. For example, understanding how changes in the sun affect climate requires knowledge of the interactions between the sun, atmosphere and ocean. And yet despite the complexities of our climate system, the science has emerged with sophisticated methodologies for understanding the processes responsible for past climate and for evaluating the uncertainties.

Today a strong consensus has emerged identifying human activities with the warming of the planet.[43] Although many gaps remain in the scientific understanding of the climate system, the primary case for human contribution is well established in the scientific community. However, when the public attempts to reach their own conclusions about the science, the complexities inherent in the climate system make progress challenging. In fact, it is quite difficult for non-scientists to accurately evaluate a proposed climate change mechanism, thus making various nonspecialist claims appear as valid as established ones. This complexity in the science can make some people wary of the conclusions, and allow others to promote ideas within the public that have little merit. At some point, it seems that public trust of the conclusions reached by the consensus of scientists is necessary, since the general public does not have the scientific background to accurately form their own conclusions.

11.3   *Media Coverage is 'Balanced'—and Thus Creates Uncertainty*

For many years, the US media have reported on 'both sides'—those who warn of climate change and those who deny it—and often continue even today to discuss 'both sides'. Many in the American public thus still feel the issue is undecided among scientists, which is not true. When issues like "Climategate"[44] and errors in the IPCC report emerged, they further clouded what was going on for many people.

Thus media coverage of climate change in the US contributes—partly consciously, partly unconsciously—to public uncertainty. American newspaper

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43   IPCC, *Climate Change 2007*.

44   "Climategate" refers to a Climatic Research Unit (CRU) email controversy that began in November 2009 with the hacking of a server of the CRU at the University of East Anglia (UEA). Climate change denialists argued that the emails showed climate scientists had manipulated data. In response to the controversy, several academies of science released statements supporting the scientific consensus that the Earth's mean surface temperature had been rising for decades and that this warming was caused by human activities.

readership is declining[45] and the Internet is overtaking television as most common way for Americans to get their news.[46] The vast availability of information online compels many people to make discriminating choices among news sources, influenced by personal and social filters.[47] Only a small group of 'already informed and engaged citizens' receive comprehensive news coverage on climate change.[48]

Overall, media coverage of scientific explanations of anthropogenic climate change depicts an area of great confusion and intense conflict rather than consensus.[49] Coverage that incorporates sceptic arguments in order to achieve 'balanced and objective' reporting implies that there is still a question of the validity and certainty of science despite overwhelming scientific consensus.[50]

The Fox News Channel, whose slogan is "Fair and Balanced", is America's most watched cable news program since 2002. In 2009, during Fox News' coverage of the email leaks from the University of East Anglia, a managing editor sent an email instructing reporters not to report climate data without immediately including critical views.[51] Such 'objective' coverage helps maintain an aura of uncertainty surrounding climate science. And such uncertainty helps sceptics to argue that climate change science is mere opinion or belief. Media coverage and industry-backed denial magnify the broader issues of improving public awareness in America.

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45   Edmonds, Rick, Emily Guskin, and Tom Rosenstiel, "The State of the News Media: An Annual Report on American Journalism," published 2011, accessed September 12, 2013. http://stateofthemedia.org/2011/newspapers-essay/data-page-6/.

46   Pew Research Center, "Internet Gains on Television as Public's Main News Source," published January 2011, accessed September 12, 2013. http://www.people-press.org/2011/01/04/internet-gains-on-television-as-publics-main-news-source/.

47   Moser, Susan C., and The Canada Institute of the Woodrow Wilson International Communicating Climate Change, "Motivating Citizen Action," published by Encyclopedia of Earth, 2008, accessed September 12, 2013. http://www.eoearth.org/article/Communicating_climate_change_motivating_citizen_action.

48   Nisbet, Matthew C., "Communicating Climate Change: Why Frames Matter for Public Engagement," *Environment* 51.2 (2009): 12–24.

49   Boykoff, Maxwell T., "From Convergence to Contention: United States Mass Media Representations of Anthropogenic Climate Change Science," *Transactions of the Institute of British Geographers* 32.4 (2007): 477–489.

50   Boykoff, Maxwell T. and Jules M. Boykoff, "Balance as Bias: Global Warming and the US Prestige Press," *Global Environmental Change* 14 (2004): 125–136.

51   "Fox Leaks: Fox Boss Ordered Staff to Cast Doubt on Climate Science," published by Media Matters for America, December 2010, accessed September 12, 2013. http://mediamatters.org/blog/2010/12/15/foxleaks-fox-boss-ordered-staff-to-cast-doubt-0/174317.

11.4   *Religious Context*

A segment of the US population does not think humans can alter the world, or believes climate change is just a test for humanity by God. Their faith trumps logic. Consider here again that consistently over the last half century, more than ninety percent of the US population considered themselves, in one way or another, to believe in God.[52] In Gallup polling over the last thirty years (1982–2012), the percentage of Americans who believe that God created humans has remained steady at around forty-five percent.[53] During the same time, only about fifteen percent of Americans believe that humans evolved and that God had no part in the process.[54]

Further Gallup analysis suggests that the most religious Americans, as measured by their church attendance, are the most likely to be creationists. With such a large percentage of Americans dismissing the evolution of the human species, it is not surprising that a relatively large segment of the population would distrust the science behind climate change. For that matter, the National Center for Science Education, an advocacy organisation defending the teaching of evolution in schools for nearly thirty years, now has a second front to defend—Climate Science.[55]

Although strongly religious groups in the US tend to distrust the science of the changing climate, there are efforts within religious organisations to bring the issue of climate and the role of 'stewardship' and 'protection of the weak' to the various faith-based communities. The growth of these ideas varies among different groups and it remains to be seen how faith groups respond to these appeals.

12   Change-oriented Policies: Realistic or Unrealistic for the—Present and Upcoming—US?

Taking these elements together: Will the results of the current climate change science have a chance to become a departure point of change for those who make up the majority of the US? Or is science not as important and impactful

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52   Newport, "More than 9 in 10 Americans Continue to Believe in God."

53   "Evolution, Creationism, Intelligent Design," published by Gallup (2012), accessed September 12, 2013. http://www.gallup.com/poll/21814/evolution-creationism-intelligent-design.aspx.

54   Ibid.

55   National Center for Science Education, accessed September 12, 2013. http://ncse.com/climate.

in the US as it may seem to (sometimes, certainly) culturally biased European eyes?

Between 2003 and 2007, a number of serious attempts to enact climate change legislation were proposed in the US Congress, but none were able to gain the required support in both the House of Representatives and the Senate. These policies proposed a mix of strategies to reduce emissions of heat trapping gases, such as fuel standards for new vehicles, renewable energy standards for power plants and research and development for new technology such as carbon capture and storage. Mainstream critics of the legislation suggested that these reforms would negatively affect the US economy. For example, lawmakers from coal producing states, or in states producing US-made automobiles felt threatened by the proposed changes. Although prior national legislation to promote cleaner air and water had been successfully implemented in previous decades, climate change legislation never gained sufficient support from both the Congress and President.

As mentioned, during the era of Barack Obama (since January 20, 2009), the intention to use policy as a way to mitigate and adapt to climate change attained a more prominent role for the first time in US history. At the time, various policy strategies existed for ways to manage rising levels of heat-trapping gases including, cap and trade, a carbon tax, or simply adapting to the changes in climate as they manifest themselves. The American Clean Energy and Security Act of 2009 was an energy bill proposed to Congress that would establish a type of emission trading plan in many ways similar to the European Union emission trading mechanism. The bill proposed setting a limit or cap on emissions of greenhouse gases (GHGs) from primary industries. Companies would then be allowed to buy and sell permits to emit greenhouse gases, thus providing a marketplace for emissions and financial incentives to reduce emissions through efficiency and advanced technologies. Each subsequent year, the number of emission permits would be reduced, thus decreasing national emissions of greenhouse gases. The legislation also included regulations on electric utilities to increase their portfolio of renewable energy, and subsidies to promote clean energy technologies. Although the legislation was narrowly passed in the lower house, it did not have the support to emerge from the Senate. As in earlier efforts, economic and ideological concerns prevailed.

13   Some Encouraging Perspectives

At present, the outlook remains mixed. Although formal legislation has not been possible, the US Environmental Protection Agency (EPA) has recently begun regulating greenhouse gases under the Clean Air Act (CAA).

The CAA was originally enacted in 1963 and aims to control air pollution to protect public health at a national level. Further amendments to the CAA expanded the ability to regulate stationary (from factories) and mobile (from automobiles) sources to address issues related to toxic air pollution, acid rain and ozone depletion. Since the Clean Air Act broadly regulates any air pollution that endangers public health or welfare, the EPA was petitioned in the early 2000s to regulate the primary greenhouse gases to protect the American public against human-induced climate change. At the time, the EPA resisted this effort, in part because such policies were not consistent with President George W. Bush's policies for 'addressing' climate change. The EPA's position however was challenged in court, leading to a protracted legal battle that lasted many years. Eventually, the case was taken to the Supreme Court, and by a 5–4 ruling in 2006, the Supreme Court decided that greenhouse gas regulation was within the definition of the CAA and that the EPA had authority to regulate emissions. Under the authority of the Supreme Court and with support from President Obama, the EPA then set a course for regulating greenhouse gases from stationary and mobile sources.

The results are that the new EPA authority have provided the first opportunity for national regulation of GHGs. Although plans for regulations are proceeding through normal review and evaluation mechanisms, some changes have already been made. Most significantly, in 2011 President Obama together with the EPA announced changes to the national fuel efficiency standards for new cars. Fuel economy would increase from the current 27 miles per gallon to 54.5 miles per gallon by 2025.[56] Since transportation is such a large part of US GHG emissions, these changes reflect a significant reduction in GHG emissions.

These policies are all responsible reactions to the well-established science asserting that climate will continue to change in ways that will have significant negative impacts on US and global society. However, for some parts of the American population, most of the policy options are still unacceptable, and thus challenging the underlying science becomes a good alternative. If the still

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56   Vlasic, Bill, "US Sets Higher Fuel Efficiency Standards," published by *The New York Times*, August 28, 2012, accessed March 20, 2014. http://www.nytimes.com/2012/08/29/business/ energy-environment/obama-unveils-tighter-fuel-efficiency-standards.html?_r=0.

widespread 'science of denial' cannot be successfully challenged to suggest that it is incorrect, or at least that uncertainties are large enough to preclude any required changes, then there will be little support for policy change.

14   The "Six Americas": The Findings of the Yale University Climate Change Communication Project

As described above, a variety of different factors contribute to America's perceptions of climate change, and America's perspective is changing. The Yale Project on Climate Change Communication conducts research on public awareness of climate change including attitudes, individual behaviours and support for policy action. The Yale Project's ongoing survey, "Global Warming's Six Americas", outlines psychological, political and cultural factors that produce six distinct audiences in the US, measured along "climate change beliefs, attitudes, risk perceptions, motivations, values, policy preferences, behaviours, and underlying barriers to action".[57]

The Yale Project refers to these "Six Americas" as alarmed, concerned, cautious, disengaged, doubtful, and dismissive. The Six Americas study presents a spectrum:

- The most concerned about climate change are 'alarmed' and are certain that climate change is a real and present risk. Individuals are taking action as consumers and voters to ameliorate the problem.
- A level down from the alarmism of this first group are 'concerned' Americans who are persuaded of the reality and gravity of the changing climate, but do not personally engage in mitigation actions.
- Less worried are 'cautious' Americans who think climate change is a problem, but are less convinced of the urgency of the problem. They perceive very little personal risk.
- 'Disengaged' Americans represent a fourth audience—they are not knowledgeable about climate change. Because of this, they are the most easily persuadable.
- Next on the spectrum are 'doubtful' Americans who view climate change as a natural phenomenon, and certainly not a crisis. They do not support national action.

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57   Yale School of Forestry & Environmental Studies, accessed September 12, 2013. http://environment.yale.edu/climate/publications/global-warmings-six-americas-2009/%20%20para%201.

- The sixth audience is 'dismissive' Americans who are convinced that climate change is not happening, and are actively opposed to national policies that address it.

These (typological) six audiences provide some leverage for understanding America's perceptions of the future, and the potential for US action. Each is distinguished by a certain set of behaviours and attitudes that create a certain perspective about climate change. Earlier, we discussed structural barriers, such as industry denial and media bias, that influence US perceptions. As we consider the potential for American political action, it is useful to understand America's perception of the problem in relief against their vision of the future. Social and psychological (including cognitive) factors play into US views of climate change.[58] Social and cultural barriers include perceptions of social and economic equity, and levels of conformity and aspiration. Individuals define issues based on a set of relatively fixed factors: values, ideology, culture, history and perceptions of social forces. Given the perception of change in climate, uncertain knowledge and conflicting information about the environment created by industry denial and media's efforts to be 'balanced', individuals are more likely to rely on these base factors.[59]

   Psychological barriers begin with ignorance, in which individuals do not consider climate change a significant problem and possess a dearth of knowledge about appropriate responses to the problem. Uncertainty refers to an individual's variable exposure to the facts of climate change. Most people's understanding of climate change comes from virtual or indirect exposure through news, video and charts. These representations of the problem necessarily involve uncertainty because they depict the causes and effects of climate change through projections and predictions. Add to this the psychological barrier of mistrust against (and of) experts and a reaction to any policy that is perceived as a threat to freedom, and uncertainty provides a large cognitive barrier to surmount when communicating to Americans about climate change.[60]

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58   Cf. Moser and The Canada Institute of the Woodrow Wilson International Communicating Climate Change, "Motivating Citizen Action."

59   American Psychological Association (APA) Task Force on the Interface Between Psychology and Global Climate Change, "Psychology and Global Climate Change: Addressing a Multifaceted Phenomenon and Set of Challenges," published 2009, accessed September 2, 2013. http://www.apa.org/science/about/publications/climate-change-booklet.pdf.

60   APA Task Force, "Psychology and Global Climate Change."

15   Varying Degrees of Uncertainty

Americans have different views on the climate system and climate models that present varying degrees of uncertainty.[61] Forty-two percent of Americans view the predictability of climate as equivalent to trying to predict the weather in advance. Thirty-seven percent view computer models as 'unreliable' and thus unable to offer accurate predictions of a changing climate.

When asked how they perceive the climate changing, thirty-four percent of Americans described a 'threshold' or 'tipping point' model that predicts climate stability within certain limits. According to this model, lower degrees of global warming will not produce large effects, but a large degree of climate change will have dangerous effects. Meanwhile, twenty-four percent in the US chose a 'gradual' model, where the climate will slowly change and gradually lead to potentially hazardous effects. Twenty-one percent chose a 'random' model, believing the climate system is totally unpredictable. Ten percent of Americans described a 'stable' model of climate change, where the global climate will be largely unaffected by changes. Each of these models argues against policy action because in their view there is a low risk of human actions affecting the environment. Only eleven percent of Americans chose a 'fragile' model based on a delicately balanced climate system upon which small increases in emissions will have dramatic climactic and devastating effects.[62]

Overall, Americans' perception of climate change seems to be based on their calculation of climate change risk. The uncertainty of climate change, compounded by media coverage and political debates remains up for debate because most US citizens do not perceive a personal risk. Americans discount future and distant possibilities of climate change when accounting for their personal risk. Most Americans personally do not directly experience climate change, and thus it remains to them a future and distant risk. Describing climate change in abstract and concrete terms compounds its geographic and psychological distance.[63]

This limitation of peprception results in a broad range of views without personal implications. Greater familiarity with climate change leads to smaller

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61   Leiserowitz, Anthony, Nicholas Smith, and Jennifer R. Marlon, "Americans' Knowledge of Climate Change," Yale Project on Climate Change Communication, published by Yale University, New Haven, 2010, accessed September 2, 2013. http://environment.yale.edu/climate/files/ClimateChangeKnowledge2010.pdf.

62   Leiserowitz, Smith, and Marlon, "Americans' Knowledge," 8.

63   APA Task Force, "Psychology and Global Climate Change," 24.

perception of its risks.[64] Even many of those in the US who see that climate change is linked to human behaviour believe it is something that will not affect individuals personally. That means that the long timeframes for climate impacts encourage people to think the impacts will not happen in their lifetime. Thanks to 'climate-controlled' buildings and cars and an industrial production and distribution system, Americans perceive climate change as something that happens in other parts of the world.[65] Thus, the immediate effects of an economic downturn overshadow long-term impacts of climate change. This lack of individual motivation impedes climate policy in the United States.

16   What is Needed: Mental Models Instead of Salient Events

The fact is that climatic change is a slow process, and thus the full and future impacts of today's actions are invisible in the present.[66] Longer-term change is remote from the immediate effects of the daily weather.[67] Media coverage of environmental impacts such as 2012's record drought, or 2011's extreme flooding in the Midwestern United States, is rather ineffective in explaining long-term change. Stories and images of devastation can cause people to worry about their personal security instead of the broader cause of climate change. Linking these extreme weather events to climate change can often backfire because most people see weather as outside of human control. Messages that emphasise climate change as a global problem and suggest changing a light bulb as a solution can have a counterproductive effect, suggesting that individual actions cannot make a difference toward such a grand problem.[68]

In the absence of salient events that tap into people's personal perceptions of the risks of climate change, mental models are needed that not only describe climate causes, but also climate effects.[69] Such models would effectively reframe climate risk in order to instill a sense of urgency arising from scientific

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64   APA Task Force, "Psychology and Global Climate Change," 26.

65   Nerlich, Brigitte, Nelya Koteyko and Brian Brown, "Theory and Language of Climate Change Communication," *Climate Change* 1.1 (2010): 97–110.

66   Moser, Susanne C. and Lisa Dilling, "Making Climate Hot: Communicating the Urgency and Challenge of Global Climate Change," *Environment* 4 (2004): 32–46.

67   Moser, Susanne C., "Communicating Climate Change: History, Challenges, Process and Future Directions," *Climate Change* 1 (2010): 31–53.

68   Moser, and Dilling, "Making Climate Hot."

69   Boer, Joop de, "Framing Climate Change and Climate-proofing: From Awareness to Action," in *Communicating Climate Change: Discourses, Mediations and Perceptions*, ed. Anabela Carvalho (Braga: Centro de Estudos de Comunicação e Sociedade, Universidade

models and observable phenomena. A model based on experience, tightly linking anthropogenic emissions with wide-ranging effects of global warming could instil a sense of collectivity and responsibility.

Such a model would thus present climate change as a problem for the status quo—not simply as a future predicament. It would have to broaden acceptance that immediate action is preferable to prevent a greater risk of climate change impacts in the future. Thus a model for future communication about climate risk would weigh delayed action as prohibitively and catastrophically expensive. Responding to short-sighted views of American progress requires models that calculate long-term investments against minimal immediate personal sacrifice.[70] Communicating about climate change to American audiences requires strategies to appeal to (at least six) diverse audiences and therefore must address individual perceptions of risk with mental models that reframe climate change as an immediate and present concern that will create a different future from what Americans may currently expect.

17   Conclusion and Outlook

Whether the sphere of civil society in the United States might be able to increasingly impact the overall process of environmental awareness and action through new social media and blogging communities; what role American NGOs could play to enlarge their still very marginal involvement; and how far a more accurate journalistic awareness of the topic may change the general perception in more rapid ways and eventually reach out to a serious change of lifestyles—all are disputed, and are, despite all respective efforts, in essence wide open (as is also the case, by the way, in many other industrialised nations).[71] How far 'climate geopolitics' may become a factor of growing importance for US global strategies will depend on developments both in the areas of renewable energies and technological progress, as well as on international

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do Minho, 2008), 158–169, accessed September 2, 2013. http://www.lasics.uminho.pt/ojs/index.php/climate_change9.

70   Moser, Susanne C., "Communicating Climate Change and Motivating Civic Action: Renewing, Activating, and Building Democracies," in *Changing Climates in North American Politics: Institutions, Policymaking and Multilevel* Governance, ed. H. Selin and S.D. VanDeveer (Cambridge, MA: The MIT Press 2009), 293.

71   Sauer, Martina et al., *Berliner Forschungsjournal Soziale Bewegungen*, Special Issue: *Winning Minds. The Struggle over Public Opinion in Climate Politics*, Heft 2, 25.2 (2012), accessed September 12, 2013. http://www.forschungsjournal.de/jahrgaenge/2012heft2?page=7.

political agreements. Independently of its democratic government, the US is unlikely to act unilaterally in one or more of these areas.

What can be predicted, though, is that there will be more strategic interpretations of climate change and global warming within the domestic public of the US than in the past; and that the topic, gaining in public visibility both through natural catastrophes and debate, will most probably attract a greater variety of societal actors that will attempt to influence the social perception of climate change and the environment in general. Among them are both 'rightist' movements like the Tea Party and 'leftist' movements like Occupy Wall Street and the '99 Percent', who pursue their own respective interests, using the topic as part of their general arguments. In contrast, what is still missing in the US is a strong 'green' movement in its own right, able to impact the public sphere on a national level. Whether such a movement—which is still confined to, in most cases, local social initiatives—will have a chance to establish itself as a concrete, stable and reliable socio-political force or as a stripe within existing greater movements on a national level is still unclear. Its emergence may not happen any time soon, due to the ideological polarisation the US is going through as a consequence of its history since 9/11, a polarisation which hinders third or fourth political movements in their public outreach.

Be that as it may, the US debate on climate change will continue as a 'hot' topic in domestic American politics.

From Conservationists to Environmentalists: The American Environmental Movement

Angela Mertig

Abstract

The environmental movement in the United States has undergone substantial changes during the last century. From its approximate beginnings in the conservation movement toward the end of the 19th century, the movement has evolved from a relatively narrow preoccupation with the conservation of local resources and the preservation of scenic areas, parks and forests to the broader concerns of toxic pollution, biodiversity protection and the prevention of global climate change. Early organisations and activists were primarily conservationists and preservationists. While conservation and preservation still exist within the movement, the organisations, activists and ideologies of the movement have expanded to encompass a framework more adequately depicted as 'environmentalist' or even 'ecologist'. This paper provides a broad outline of how the American environmental movement has evolved and how, in doing so, it has responded to the evolving social context in which it exists.

1 Introduction

The environmental movement in the United States has undergone substantial changes during the last century. The ideological and organisational roots of the movement are commonly traced to the progressive conservation movement (PCM) at the end of the 19th century. The PCM encompassed two complementary yet often competing perspectives, namely conservationism and preservationism. While contemporary environmentalism still encompasses both of these concerns, the environmental movement has evolved considerably since the late 19th century, reflecting significant changes that have occurred in society and in the scientific understanding of environmental issues. The movement has become 'environmental', a term used to imply a broader, more holistic perspective and a more extensive slate of issues. The movement has evolved from a relatively narrow preoccupation with the conservation of local resources and the preservation of wildlife and scenic areas to the broader concerns of

toxic pollution, biodiversity protection and the prevention of global climate change. This chapter provides a broad outline of how the US environmental movement has evolved ideologically from its preservationist/conservationist beginnings and through the course of the twentieth century. As evidence of anthropogenic global climate change has mounted, the environmental movement has evolved not only to incorporate this issue into the core of its agenda but environmental groups are increasingly drawing connections between climate change and social injustice, leading to the recent emergence of a 'climate justice' movement.

2   The Progressive Conservation Movement (PCM)

2.1   *Enlightenment versus Romanticism*

Like in other Western societies, there is a longstanding tension in US history between ideas based on the Enlightenment, with its emphasis on scientific progress and rationality, and ideas based on Romanticism, with its emphasis on spirituality and intuition.[1] This tension has played a significant role in the profound ambivalence that Americans[2] have held with regard to nature. On the one hand, Americans value technological progress, scientific innovation and economic growth which privilege benefits to producers and consumers over costs to the environment. The dominant worldview in the US (and the 'Western' world more generally) stresses that nature is to be used in order to perpetuate growth and progress.[3] Much of US history, particularly in the nation's early years, has been characterised by a laissez faire approach to the use of natural resources in which people, as the sole authors of their destinies, are viewed as unregulated controllers of their own property and of nature. Enlightenment ideas of progress and scientific rationality, which ultimately fed into the conservationist strain of the PCM, modified these notions only in that natural resources were now to be used in a more carefully considered way; people were still expected to use them rather than to protect them from use.[4]

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1   Petulla, Joseph M., *American Environmental History: The Exploitation and Conservation of Natural Resources* (San Francisco: Boyd and Fraser, 1977).

2   While "America" is technically broader than just the United States, I use "Americans" here to refer to people living in the United States.

3   Catton, William R., and Riley E. Dunlap, "A New Ecological Paradigm for Post–Exuberant Sociology," *American Behavioral Scientist* 24.1 (1980): 15–47; Kline, Benjamin, *First Along the River: A Brief History of the U.S. Environmental Movement*, 4th ed (New York: Rowman and Littlefield, 2011).

4   Petulla, *American Environmental History*.

On the other hand, the American public has also recognised that technological and economic progress often tend to devalue issues of spirituality and aesthetic sensibilities, often leading to the decline of traditional values and damage to the natural world. Throughout US history, nature has been seen as a vital component of the national landscape and character, and as a source of inspiration, an object of reverence, and representation of the divine.[5] This view has frequently clashed with both the laissez faire and the Enlightenment approaches to nature and natural resources.

The conflict between these two different approaches to nature (Enlightenment rationality versus Romantic spirituality) helped to spawn the PCM; at the same time, the conflict between these ideas became enshrined within the movement through a split between conservationists and preservationists. While conservationists reacted negatively to early American laissez faire approaches to the natural world, they eagerly adopted an Enlightenment approach, which allowed continued exploitation of the natural environment through scientific and rational management.[6] Both the laissez faire and Enlightenment approaches have ultimately been at odds with a preservationist approach. Despite the Enlightenment influence on early concerns about American treatment of the environment, the earliest voices of concern about the environment tended to be preservationist and Romantic in orientation.

2.2   *Preservationist Impulses Prior to the PCM*

Early European settlers in North America treated the natural world and its original inhabitants with considerable disdain. Natural resources were used more quickly and wastefully in a laissez faire approach to nature than many had likely anticipated.[7] The earliest voices raised against the reckless use of natural resources were largely isolated and unnoticed. However, expressions of concern grew in intensity and frequency as America became increasingly urbanised, industrialised and settled.[8] The earliest advocates for protecting the environment tended to be intellectuals, who framed their concerns in Romantic and religious terms. The use of religion and spirituality to frame concerns about the environment was increasingly appealing to the general

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5   Huth, Hans, *Nature and the American: Three Centuries of Changing Attitudes*, (Lincoln: University of Nebraska Press, 1957); Nash, Roderick, *Wilderness and the American Mind*, 3rd ed. (New Haven: Yale University Press, 1982).

6   Kline, *First Along the River*.

7   Petulla, *American Environmental History*; Kline, *First Along the River*.

8   Petulla, *American Environmental History*; Nash, *Wilderness and the American Mind*; Kline, *First Along the River*.

American public as they became ever more fearful of the impacts of rapid ur-
banisation and industrialisation on the structure and morality of society.

The Romantic movement of the early 1800s was a fundamental influence on
increasing concerns about nature.[9] Romanticism began largely as a literary
movement in Europe; however, its critique of the Enlightenment and its belief
in the natural world as a source of inspiration, imagination, creativity, freedom
and beauty quickly spread to the US and into numerous other fields of thought.[10]
Romantics were highly critical of urbanisation and industrialisation, strongly
revering rurality and traditional, especially indigenous, lifestyles instead. Ro-
manticism had a powerful influence on Transcendentalism, a movement that
developed in the US to protest dominant religious strains in the early to mid-
1800s. Transcendentalists, including the famous writers Ralph Waldo Emerson
and Henry David Thoreau, urged people to commune with nature, to get away
from the squalor of the city; they believed that people achieved union with
God through nature.[11] Reform movements in the early 1800s likewise blamed
many social evils on the rapid industrialisation and urbanisation occurring at
the time; the solution for many of these ills (e.g., delinquency, crime, poverty,
alcohol abuse) was to put people back in nature. Nature, therefore, needed to
be preserved as a refuge for humanity.

Several prominent figures openly advocated for environmental preservation
in the 1800s, including John James Audubon, George Catlin and Frederick Law
Olmstead.[12] Environmental preservation also received support from the sci-
entific world via Charles Darwin's *On the Origin of Species* in 1859, showing that
humans were part of nature and not separated from it. Likewise, George Per-
kins Marsh's *Man and Nature* in 1864 presented evidence of extensive environ-
mental destruction in Vermont and pleaded for the protection of natural
resources. The protection of nature was not only becoming more readily ac-
cepted; its implementation, at a national level, was also beginning: in 1872, the
first national park, Yellowstone National Park, was established in north-west-
ern Wyoming.

In 1890, the US Census declared that the US frontier was closed; there was no
longer a clear 'frontier line' distinguishing settled and unsettled portions of the
continent. This declaration is credited with promoting a dramatic growth in
concern about the fate of the US and of America's remaining natural lands.
Hence, just as the Census Bureau was seemingly declaring the triumph of

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9   Kline, *First Along the River*.

10   Petulla, *American Environmental History*.

11   Nash, *Wilderness and the American Mind*.

12   Ibid.

Enlightenment, with technological and economic progress going hand in hand with the march of 'civilisation' across the continent, a movement based on Romantic concerns to save the remaining natural areas was developing.

The frontier was a potent symbol to the young American nation. The frontier symbolised limitless resources, rugged individualism, and freedom.[13] According to the "Frontier Thesis", espoused by historian Frederick Jackson Turner shortly after the closing of the frontier, the frontier, and the wild nature contained on the frontier, was a uniquely American phenomenon, which laid the foundation for American democracy. The declaration of the 'end' of the frontier was, on the one hand, a symbol of progress, but it was also a forceful symbol of loss. The combination of the closing of the frontier, high rates of industrialisation and urbanisation and rapid depletion of initially vast resources, such as the extinction of the passenger pigeon and the near extinction of the bison, fuelled growing efforts to preserve and protect nature. Ironically, the earlier forces, which compelled settlers to conquer nature as part of a 'manifest destiny', the notion that God mandated people of European descent to spread democratic civilisation by taking possession of and exploiting the continent, had resulted in a new push to protect that same nature.[14] Unease with rapid social changes and the profligate use of resources led to growing pressure for the regulated and efficient (non-wasteful) use of remaining resources and the preservation of tracts of Western land as a means of keeping a perpetual frontier as a lasting source of US democracy and purity. Similar concerns were echoed in the progressive movement at the turn of the 20th Century, which advocated reforming people's living conditions; protecting nature, was again viewed as a central aspect of improving the condition of humanity.[15]

2.3 Conservationists and Preservationists during the PCM

When discussing the PCM, historians typically divide it into two broad camps: utilitarian conservationists and Romantic preservationists. While conservationists were primarily interested in the wise use and scientific management of natural resources, preservationists were primarily interested in protecting natural areas from the encroachment of industrialisation.[16] Preservationist-oriented organisations and activists focus their efforts on setting aside protected areas (e.g., parks, forests, wilderness areas) and protecting wildlife

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13   Nash, *Wilderness and the American Mind*.

14   Ibid.

15   Petulla, *American Environmental History*.

16   Hays, Samuel, *Conservation and the Gospel of Efficiency* (Cambridge, MA: Harvard University Press, 1959); Nash, *Wilderness and the American Mind*.

and their habitats from human use. From the preservationist perspective, it is vital to protect wilderness and wildlife because nature is "an important component in supporting both the physical and spiritual life of humans".[17] Preservationists, particularly contemporary ones, have also focused on the importance of preservation for the sake of nature itself as well as for the 'ecological services' that nature provides to human society.

Early preservationist interests were led by naturalist and writer John Muir, who was instrumental in the establishment of the second US national park, Yosemite National Park in California in 1890. Like previous preservationists, Muir (who had long since rejected the Calvinism of his upbringing) often couched his concern for the environment in spiritual terms, referring to stones as altars and to Yosemite as a temple. In 1892, Muir organised the first organisation devoted to preserving wild lands, the Yosemite Defense Association (soon renamed the Sierra Club). A key activity of the group was to sponsor hiking trips to the mountains to enlist people's support for their protection. Initially limited to the San Francisco area, the Club has since become one of the foremost environmental organisations in the nation, focusing on numerous issues in addition to the preservation of land. Several other prominent preservationist organisations also formed during this time. Preservationist goals became institutionalised in the National Park Service (1916), whose purpose has been to preserve natural beauty and facilitate recreation in the national parks.

Although organised activities on behalf of preservationism began somewhat earlier than organisation on behalf of conservationism,[18] the latter had greater success in having its ideas associated closely with the larger movement (hence, the term progressive 'conservation' movement). Conservationism emphasises the stewardship of natural resources and their continued use for 'the greatest good to the greatest number' of people.[19] This utilitarian philosophy was meant, through government regulation and scientific management, to overcome the extensive misuse of natural resources embodied in the laissez faire approach to natural resources that dominated US history to this point. Conservationist interests, led by Gifford Pinchot, the nation's first professional forester, had less organised support from the public; however, they were very successful at getting their agenda incorporated into new government agencies—largely due to the close relationship between Pinchot and President

17   Brulle, Robert J., *Agency, Democracy, and Nature: The US Environmental Movement from a Critical Theory Perspective* (Cambridge, MA: MIT Press, 2000), 98.

18   Brulle, *Agency, Democracy, and Nature.*

19   Pinchot, Gifford, *The Fight for Conservation* (Garden City: Harcourt, Brace, 1910).

Theodore Roosevelt.[20] Conservationist ideas were institutionalised in the form of the Forest Service and the Bureau of Reclamation, both of which focus on the 'multiple use' of resources, as opposed to the National Park Service, which preserves land purely for recreational or aesthetic purposes.

Despite obvious intersections between preservation and conservation, they represent distinct ideologies that have led to conflicts throughout the history of environmentalism in the US. Preservationists and conservationists came into direct opposition, for example, in the struggle over damming the Hetch Hetchy river valley inside the Yosemite National Park, a battle that lasted from 1908 to 1913. Conservationists and developers led by Gifford Pinchot urged that the dam be created to provide water to San Francisco, which had been ravaged by an earthquake in 1906, while John Muir and other preservationists decried the despoliation of a beautiful valley inside a national park.[21] President Roosevelt, a great believer in conservation and a friend to both Muir and Pinchot, ultimately sided with Pinchot, and the valley eventually was dammed. While this was a momentous defeat for preservationists, it did not stop them from pressing their cause in the ensuing decades.

2.4   *Conservationists and Preservationists up to the Environmental Movement*

After the heyday of the PCM and the subsequent battle over the Hetch Hetchy dam, conservationist and preservationist issues diminished considerably from the public eye. Despite the advent of two world wars and the Great Depression, however, these issues did not entirely disappear.[22] President Franklin Delano Roosevelt initiated several conservation oriented programs as part of his 'New Deal', including the Civilian Conservation Corps and the Tennessee Valley Authority, which dealt simultaneously with the social devastation of the Great Depression and several contemporaneous environmental disasters, including massive flooding and the devastating loss of topsoil in Oklahoma and adjacent states during the 'Dust Bowl'[23]. Aldo Leopold, a forester, also advanced the cause of preservationism during this time period by initiating the idea of granting wilderness status to undeveloped portions of the National Forests. In 1924,

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20   Hays, *Conservation*.

21   Nash, *Wilderness and the American Mind*.

22   Nash, Roderick, *The American Conservation Movement* (St. Charles: Forum Press, 1974).

23   The 'Dust Bowl' refers to a period of extreme dust storms throughout the prairie lands of the US and Canada during the 1930s. The storms stemmed from problematic farming techniques, resulting in massive losses of topsoil, impaired visibility throughout much of the US and extensive displacement of farmers. See, e.g., Worster, Don, *Dust Bowl: The Southern Plains in the 1930s* (New York: Oxford University Press, 2004).

500,000 acres in the Gila National Forest in New Mexico were designated as the first Forest Service wilderness area.[24] Later in his career, Leopold became America's first professional wildlife manager, and in the 1930s he developed a philosophy termed 'the land ethic', which is often cited as a basic tenet of modern US environmentalism and is outlined eloquently in *A Sand County Almanac*.[25] The land ethic promoted the idea that humankind was to be seen as a part of nature rather than a master of it.

In 1935, Leopold and another forester, Robert Marshall, organised the Wilderness Society, a national organisation, which continues to be a strong advocate for the preservation of wilderness.[26] Both the Wilderness Society and the Sierra Club went on to successfully fight against two dam projects in the 1950s and 1960s, the Echo Park Dam project on the Colorado-Utah border in the Dinosaur National Monument and a proposed dam in the Grand Canyon of Arizona. The Wilderness Society's success in fighting the Echo Park Dam prompted them to fight for a national wilderness preservation system.[27] Through their efforts and those of other activists, the Wilderness Act of 1964 was passed, immediately protecting nine million acres of federally owned wilderness.[28] These successes garnered greater public attention for preservationist causes at a critical point in American history; greater public attention to the potential utility of such collective action helped to fuel the development of a new episode of activism on behalf of environmental issues. It is at this point in time, the decade of the 1960s, that we can discern a fundamental shift in the movement to protect the environment.

3   Rise of the Environmental Movement

Despite important continuities with the PCM, the contemporary environmental movement is typically considered a distinct movement. While no specific date or event marks a clear break, at least three events have typically been used to demarcate the beginning of the modern environmental movement in the US. The first event was the publication of Rachel Carson's *Silent Spring* in 1962. Her book played a key role in the development of a new 'environmental' perspective, since she persuasively articulated to an educated lay audience the burgeoning research concerning the detrimental effects of the array of new

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24   Worster, *Dust Bowl*.

25   Ibid.

26   Nash, *Wilderness and the American Mind*.

27   Nash, *The American Conservation Movement*.

28   Ibid.

chemicals and pesticides unleashed by post-war industry and agriculture. The second event was the founding of the Environmental Defense Fund (1967) and the Natural Resources Defense Council (1970). Their development reflected substantial shifts in environmental organising. They focused on a qualitatively different set of issues, were founded with corporate and foundation sponsorship (e.g., the Ford Foundation), and specialised in scientific and legal aspects of environmental issues.[29] The final event was the first Earth Day on April 22, 1970, which mobilised massive and highly visible public support on behalf of environmental causes. Millions of people participated across the US in Earth Day activities.

The shift from conservation/preservation to a broader environmental movement marked an important ideological change in US environmental consciousness. Environmentalism encompassed a much broader set of concerns than either conservationism or preservationism.[30] Even so, the concerns of the earlier era did not disappear. If anything, the new ideology of environmentalism was grafted onto the older agenda, augmenting rather than displacing it,[31] and the older organisations gradually evolved to incorporate both the older and newer concerns. The older organisations, especially those that were more preservationist in orientation, actually fared quite well in terms of drawing supporters and resources despite the general ideological transformation in the movement.[32] While numerous environmental organisations sprouted during this time, they also eventually added the more traditional foci to their repertoires. The older organisations were also immensely helpful to the newer environmental organisations, providing an important source of encouragement, strategies, activists and material resources.[33]

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29   Mitchell, Robert Cameron, "From Conservation to Environmental Movement: The Development of the Modern Environmental Lobbies," in *Government and Environmental Politics: Essays on Historical Developments Since World War Two*, ed. Michael J. Lacey (Washington, D.C.: The Wilson Center Press, 1989), 81–113.

30   Mertig, Angela G., Riley E. Dunlap, and Denton E. Morrison, "The Environmental Movement in the United States," in *Handbook of Environmental Sociology*, ed. Riley E. Dunlap and William Michelson (Westport: Greenwood Press, 2002), 448–481.

31   Brulle, *Agency, Democracy, and Nature*; Johnson, Erik, "Changing Issue Representation among Major United States Environmental Movement Organizations," *Rural Sociology* 71.1 (2006): 132–154.

32   Carmichael, Jason T., J. Craig Jenkins, and Robert J. Brulle, "Building Environmentalism: The Founding of Environmental Movement Organizations in the United States, 1900–2000," *Sociological Quarterly* 53.3 (2012): 422–453.

33   See, e.g., Mitchell, "From Conservation to Environmental Movement;" Mitchell, Robert Cameron, Angela G. Mertig, and Riley E. Dunlap, "Twenty Years of Environmental Mobilization: Trends Among National Environmental Organizations," in *American Environ-*

The modern environmental movement emerged during an era of wide-spread political activism and reform.[34] Activism among the American youth was spreading across college campuses, public concern was raised over many political issues, and a general reform atmosphere permeated the American government. The various social movements of the 1960s provided some of the impetus for the environmental movement, as activists were spurred on by the apparent efficacy of collective action toward achieving social goals.[35] The movement quickly achieved high levels of support from the public, activists and even elites—all of whom found environmental issues to be relatively appealing and consensual compared to the civil rights and the anti-Viet Nam protests. Indeed, some critical observers viewed the early environmental movement as an elite attempt at diverting social concern from more radical causes;[36] this view declined as the costs of environmental programs to elite interests became more apparent over time.

The growth of scientific evidence on environmental degradation, eloquent-ly documented in Carson's *Silent Spring*, coupled with media-enhanced disas-ters like the Santa Barbara, California oil spill and the burning of Cleveland, Ohio's Cuyahoga river,[37] both in 1969, generated widespread concern. In-creased public concern and increasing threats to the environment influenced the development of numerous new environmental organisations.[38] Post World War II affluence enabled larger numbers of people to spend leisure time in the outdoors, heightening their commitment to preserving areas of natural beauty.[39] In congruence with Inglehart's thesis connecting economic security

mentalism: The US Environmental Movement, 1970–1990, ed. R.E. Dunlap and A.G. Mertig (Philadelphia: Taylor and Francis, 1992), 11–26.

34   Kline, *First Along the River*.

35   Schnaiberg, Allan, "Politics, Participation and Pollution: The Environmental Movement," in *Cities in Change: A Reader in Urban Sociology*, ed. J. Walton and D. Carns (Boston: Allyn and Bacon, 1973), 605–627.

36   Barkley, Katherine, and Steve Weissman, "The Eco-Establishment," in *Eco-Catastrophe*, published by *Ramparts* (San Francisco, California: Canfield Press, 1970), 15–25.

37   Stradling, David, and Richard Stradling, "Perceptions of the Burning River: Deindus-trialization and Cleveland's Cuyahoga River," *Environmental History* 13 (2008): 515–535.

38   Carmichael, Jenkins, and Brulle, "Building Environmentalism;" Johnson, Erik W., and Scott Frickel, "Ecological Threat and the Founding of US National Environmental Movement Organizations, 1962–1998," *Social Problems* 58.3 (2011): 305–329.

39   Gale, Richard P., "From Sit-In to Hike-In: A Comparison of the Civil Rights and Envi-ronmental Movements," in *Social Behavior, Natural Resources and the Environment*, ed. William R. Burch, Neil H. Cheek and Lee Taylor (New York: Harper and Row, 1972), 280–305.

and "post-material" values,[40] such increases in affluence at this time, combined with increased urbanisation and education, also stimulated changes in social values, lessening concern with materialism and generating interest in the quality of life, including environmental quality.[41] The picture of the *Earthrise*, taken during the first manned mission to orbit the moon in 1968, brought home to an increasingly receptive public, the importance of protecting this singularly beautiful planet.

The contemporary environmental movement was also ushered in with important legislative and governmental policy changes. Prior to 1970, the federal government's role in environmental issues and policy had been mostly that of public lands manager.[42] This role aided both the conservationist and preservationist causes, as the government set aside some public land for full protection from human uses and other land for multiple use, including government-regulated extractive activities such as logging and mining. In the 1970s, however, the federal government began to take on a greater role by passing a plethora of legislation and developing environmental policy that was in line with the agenda of environmentalism. The National Environmental Policy Act (1969), the Clean Air Act (1970) and the Clean Water Act (1972), the best-publicised initiatives, were aimed directly at mitigating environmental damage, but conservation/preservation issues were also important in the policy and legislative initiatives at this time. Among the best-known examples are the Endangered Species Act (1973) and the Alaska National Interest Lands Conservation Act (1980), which promoted the protection of wildlife and set aside a vast portion of Alaska for protection.[43]

At the same time, traditional conservation/preservation organisations, like the Sierra Club and the Wilderness Society, were aggressively battling threats to natural areas, and broadening their agendas to incorporate a variety of issues. Organisations began to use direct mail as a means of mobilisation in the 1960s and 1970s, leading to a rapid growth in membership and public

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40   Inglehart, Ronald, The Silent Revolution: Changing Values and Political Styles among Western Publics (Princeton: Princeton University Press, 1977).

41   Hays, Samuel, *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955–1985* (New York: Cambridge University Press, 1987).

42   Kraft, Michael E., and Norman J. Vig, "Environmental Policy from the 1970s to the Twenty-First Century," in *Environmental Policy: New Directions for the Twenty-First Century*, ed. Norman J. Vig and Michael E. Kraft (Washington, D.C.: Congressional Quarterly, 2003), 1–32.

43   Vig, Norman J., and Michael E. Kraft, ed., *Environmental Policy: New Directions for the Twenty-First Century* (Washington, D.C.: Congressional Quarterly Press, 2003).

awareness.[44] Legal changes enabled organisations to fight battles on several
fronts, from congressional offices to courtrooms, where legal standing was be-
coming easier to achieve. Furthermore, new organisations, like the Environ-
mental Defense Fund and the Natural Resources Defense Council, began to
emerge, typically aided by foundation funding.[45]

The environmental movement has been considered one of the most suc-
cessful movements of the twentieth century. While it has certainly not achieved
many of its stated goals,[46] it has succeeded in building and maintaining a sub-
stantial organisational and public support base. It has likewise had a signifi-
cant effect on the legal, political, educational and cultural milieu of the US.[47]
The success of the movement, however, has also led to significant opposi-
tion—both from those who oppose environmental protection efforts[48] and
from those who prefer a stronger or different focus of those efforts. The latter
groups, those who have argued that the environmental movement has not
gone far enough in promoting environmental protection or that the movement
has neglected other aspects of environmental problems, namely social justice
aspects, have come to represent a growing ideological current within the con-
temporary movement. This current can be labelled 'ecologism' to denote an
even broader, more encompassing approach to environmental issues.

4   The Rise of Ecologism

The environmental movement, like any social movement, is far from mono-
lithic. Indeed, much of the success garnered by the environmental movement
through its relatively large, national organisations has engendered criticism
that the movement has compromised too much when addressing envi-
ronmental protection and that many of the large environmental organisations
have become ossified, overly bureaucratic, and co-opted by the political and
business interests of the status quo. Such criticism has fuelled the develop-
ment of a 'radical fringe', a group of organisations and activists that advocate
direct action (e.g., spiking trees, destroying bulldozers) and espouse

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44   Mitchell, Mertig, and Dunlap, "Twenty Years of Environmental Mobilization."
45   Ibid.
46   Brulle, *Agency, Democracy, and Nature*.
47   Mertig, Dunlap, and Morrison, "The Environmental Movement;" Bosso, Christopher J.,
       Environment, Inc.: From Grassroots to Beltway (Lawrence: University Press of Kansas,
       2005); Kline, *First Along the River*.
48   See, e.g., Brick, Phil, "Determined Opposition: The Wise Use Movement Challenges
       Environmentalism," *Environment* 37.8 (1995): 17–20.

deep ecology, a philosophy grounded in self-identification with nature.[49] Deep ecology was first articulated by the Norwegian philosopher Arne Naess, who argued that traditional environmental groups were too "shallow" and anthropocentric in their approach to environmental issues and that a "deeper" understanding of the inherent worth of nature needed to be developed.[50] Following a "deep ecological" approach, groups such as Earth First!, Earth Liberation Front and the Sea Shepherd Conservation Society have engaged in and condoned property damage in order to protect the environment for its own sake rather than for the sake of humans.[51] They argue that the environmental movement has not gone far enough in protecting the environment.

Another burgeoning area of activism within the movement claims that the environmental movement has not gone far enough in protecting people. While radical groups argue that the mainstream movement has lost sight of nature, these groups believe that the mainstream has lost sight of people. Grassroots groups fighting locally unwanted land uses (LULUs), such as toxic waste dumps or hazardous waste incinerators, have argued that the large organisations ignore their concerns in favour of more fashionable national and global issues (e.g., rainforest destruction or loss of biodiversity). Environmental justice activists have argued that the mainstream organisations have ignored issues of social justice.[52] Mainstream organisations are not only dominated by middle- and upper-class whites, but such organisations, it is argued, have ignored environmental issues faced by members of the working class and people of colour.

These relatively new wings of the movement, the radical and the grassroots groups, while having some antecedents, reflect a qualitatively different

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49   Devall, Bill, "Deep Ecology and Radical Environmentalism," in *American Environmentalism: The US Environmental Movement, 1970–1990*, ed. R.E. Dunlap and A.G. Mertig (Philadelphia: Taylor and Francis, 1992), 51–62.

50   Naess, Arne, "The Shallow and the Deep, Long-Range Ecology Movement," *Inquiry* 16 (1973): 95–100.

51   See, e.g., Foreman, Dave, and Bill Haywood, ed., *Ecodefense: A Field Guide to Monkey-wrenching* (Tucson: Ned Ludd, 1987); Manes, Christopher, *Green Rage: Radical Environmentalism and the Unmaking of Civilization* (Boston: Little, Brown, 1990); Scarce, Rik, *Eco-Warriors: Understanding the Radical Environmental Movement* (Chicago: Noble Press, 1990).

52   Freudenberg, Nicholas, and Carol Steinsapir, "Not in Our Backyards: The Grassroots Environmental Movement," in *American Environmentalism: The US Environmental Movement, 1970–1990*, ed. R.E. Dunlap and A.G. Mertig (Philadelphia: Taylor and Francis, 1992), 27–37; Bullard, Robert D., ed., *Confronting Environmental Racism: Voices from the Grassroots* (Boston: South End Press, 1993); Gottlieb, Robert, *Forcing the Spring: The Transformation of the American Environmental Movement* (Washington, D.C.: Island Press, 1993).

approach to environmental issues. In the latter part of the twentieth century, the environmental movement grew even more diverse in terms of the activists and organisations within its fold and in terms of ideological breadth. Looking at the historical sweep of ideological themes within the movement, we can discern, then, at least three broad themes: the conservationism/preservation-ism of the PCM, environmentalism, and ecologism. These three stages can really be seen as parts of one broad and continuously evolving movement aimed at protecting environmental quality.

Rather than divorcing itself from its predecessors, each stage in this broad trajectory incorporates the concerns and tactics it inherited from earlier stages into its own, expanded agenda. For instance, ecologism does not ignore issues of resource management, the hallmark of conservationism, nor does it reject tactics such as political lobbying. In fact, the evolution of the movement over-all has been marked by a gradual broadening of issues and growth in the diver-sity of groups dealing with such issues.[53] While diversity exists in most mature social movements, and has been present in conservationism/environmental-ism since the early split between Gifford Pinchot's utilitarian conservationists and John Muir's preservationists, the modern movement encompasses an ex-traordinary diversity of organisations, goals, ideologies and tactics. The scheme used here attempts to display the predominant characteristics of each stage, but it should be emphasised that substantial diversity exists at each stage, es-pecially the third.

Table 1 juxtaposes the major characteristics of each stage of environmental activism, starting with the approximate beginnings of each one. Conservation-ism (which includes both conservationism and preservationism) dates to the late 19th century when the PCM emerged; environmentalism includes the bulk of the modern environmental movement that arose in the 1960s; and ecolo-gism, it is argued, has emerged within the last few decades—partly in response to perceived weaknesses within mainstream environmentalism.

Social movement scholars distinguish movements (here, stages of one long-term movement) by their interrelated set of goals, ideologies and worldviews. Movement goals are the primary focus of action for activists; ideology is a broad statement of what the movement considers to be an 'ideal' state of af-fairs; and worldview is the lens through which activists perceive the world, in this case the natural world that they are attempting to protect. In fact, the major difference between ecologism and its forerunners is not so much in the types of issues it looks at, but rather in how it looks at them. Of special

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53   Brulle, *Agency, Democracy, and Nature*.

relevance is the distinction between an anthropocentric worldview, where humans are the centre of concern, and an ecocentric (or biocentric) worldview, where ecosystems, other species, and all life on earth are deemed important.

TABLE 2.1 *Three stages of environmental activism*

	Conservationism	Environmentalism	Ecologism
Approximate beginnings	Late 19th c.	Middle 20th c.	Late 20th c.
Primary Goals	Conservation of Natural Resources	Protection of Environmental Quality	Maintenance of Ecological Sustainability
Dominant Ideology	Natural resources should be used efficiently for the good of all society	Environmental quality should be protected for a high quality of life	Ecosystems should be protected for the benefit of all species
Worldview	Anthropocentric	Anthropocentric	Ecocentric
Nature of Issues	Geographically bounded (typically rural), specific, unambiguous	Geographically dispersed (often urban); delayed, subtle and indirect effects; potentially harmful to human health	Extremely diverse; systemic and synergistic effects; potentially irreversible and harmful to all life on Earth
Example	Over-logging of a specific forest area	Urban air and water pollution	Global environmental change
Cost of Solution	Relatively small, localized	Often substantial	Potentially infinite
Tactics	Lobbying	Lobbying, litigation, citizen participation	Lobbying, litigation, electoral action, direct action, lifestyle change
Opposition/ Culprits	Natural resource industries; local economic interests (loggers, hunters)	Corporations, economic growth, modern lifestyles	Status Quo; excess human production, consumption, and population

Despite the efforts of preservationists such as John Muir, conservationism was predominantly anthropocentric because it emphasised the wise use of resources for human benefit. Similarly, environmentalism has also been largely anthropocentric in its emphasis on environmental quality as crucial for a high quality of human life. Concerns for human health, outdoor recreational opportunities and an aesthetically pleasing natural world were all motivated by an underlying concern with the welfare of humans—even though the natural environment often derived benefit from these concerns.

The recent emergence of ecologism, however, broadens earlier concerns by incorporating an ecocentric worldview largely stemming from the advent of deep ecology and radical environmentalism.[54] Adherents of ecologism believe that nature has a right to exist in and of itself, apart from human desires. Although this position existed in the PCM via John Muir and his followers, and was given new impetus by Aldo Leopold's 'land ethic' in the mid-1900s, only recently has it become a potent voice in the evolving movement. Advocates of ecologism hold as their primary goal the maintenance of ecological sustainability, for the entire earth and all of its inhabitants.[55] Even grassroots groups, who have often been derogatorily labelled as 'NIMBY' (Not-In-My-Backyard) groups, have become concerned with the sustainability of current production systems, as witnessed by the growing 'NIABY' (Not-In-Anyone's-Backyard) attitude.[56]

Social movements are further distinguished by the types of problems or issues that they address (their 'grievances'). The issues addressed by environmental activists have expanded over time, as environmental problems and society's awareness of them have grown. Not only has each stage seen new issues incorporated into a growing environmental agenda, but the issues themselves have been perceived quite differently over time. As modern technology and lifestyles have become more complex, the environmental problems they create have likewise increased in scale and complexity. Costs of solving environmental problems have also grown, reflecting a rapid change in the magnitude of the problems and our perceptions of them.

Conservationism typically dealt with specific and ostensibly unambiguous issues, such as the protection of particular forestlands from logging. Compare this to air and water pollution, a typical concern of environmentalism. Pollution can diffuse over a broad area, its sources are often ambiguous, and its

54   Devall, Bill, "Deep Ecology."

55   Thiele, Leslie Paul, *Environmentalism for a New Millennium: The Challenge of Coevolution* (New York: Oxford University Press, 1999).

56   Freudenberg, and Steinsapir, "Not in Our Backyards."

effects may be delayed and difficult to identify. In short, pollution is subtler than logging, and controlling or stopping it is typically more difficult and costly.

Ecologism incorporates an even wider range of issues, as well as a significantly different perception of these issues. Especially notable is a greater emphasis on both micro and macro concerns. At the micro level, grassroots groups around the country are mobilising protests against garbage incinerators and hazardous waste sites. Minorities in particular are mobilising against 'environmental racism', the practice of locating environmentally noxious facilities in their communities. At the macro level, ecologism is concerned with issues of international import, such as global climate change, ozone depletion and the destruction of rainforests. In addition, the growing radical wing of the movement, mentioned earlier, promotes an ecocentric worldview and an emphasis on global ecological sustainability. In fact, radical groups like Earth First!, as well as many of the grassroots groups, developed explicitly in reaction to what they refer to as the 'reform' environmentalism and 'shallow' ecology embodied by the mainstream national environmental organisations.

Ecologism thus focuses on a bigger picture than either environmentalism or conservationism. Ecologism broadens environmental concern in various ways, fighting on a greater number of fronts—from local to global—and viewing other species and ecosystems as having rights to exist independent of human interests. Concern for equity between species parallels a growth in concern for equity within the human race and across generations, as advocates of sustainable development attempt to rectify social injustice and poverty as well as environmental devastation throughout the world.

Ecologism entails an expanded critique of the status quo, based on a systemic and large-scale view of human impact on the natural environment. The pivotal concerns of ecologism are typically those that involve long-term, irreversible, synergistic and often unpredictable consequences of human actions. Global climate change and loss of biodiversity, for instance, are not only long-term and irreversible results of human actions, but they stem from an incredibly complex interplay of factors. While environmentalism has often addressed these issues, it has looked at them in a piecemeal fashion. Ecologism, on the other hand, views them in the context of the larger ecological-evolutionary global system. Advocates of ecologism talk about the end of nature, mass extinction and the halt of evolution—unless human practices are altered, and soon. The purported causes and consequences, as well as the costs needed to remedy them, are therefore truly colossal.

Key aspects of social movements are the types of tactics they utilise. Just as the issues have broadened, so have the tactics employed by environmen-

tal activists. Tactically, conservationists relied heavily and successfully on lob-
bying government officials (epitomised by Pinchot's influence with Theodore
Roosevelt). The solution to resource problems, they felt, came with govern-
mental and scientific management of resources. In addition to traditional lob-
bying, environmentalists added litigation, research and citizen participation to
its repertoire, through the development of research- and legal-oriented groups
as well as via letter writing campaigns and mass protests.[57]

Ecologism builds upon this tactical legacy—grassroots activists march and
petition government officials, organisations engage in litigation and lobby-
ing—but it increasingly employs more aggressive tactics such as consumer
boycotts and various forms of 'direct action'. The growing radical wing of the
movement is especially likely to engage in sit-ins, 'monkey-wrenching' of
equipment and other forms of 'ecotage' (from pouring quick rice in the radia-
tor of a bulldozer to ramming a drift-net ship on the high seas) that are dis-
avowed by mainstream environmentalists intent on 'working within the
system' in order to reform it.

Recent years have also seen a rapid growth in other forms of activism like
electoral action. More and more organisations are becoming active in political
campaigns, not only publicising candidates' records but publicly supporting
selected candidates. In addition, advocates of ecologism, like their predeces-
sors, promote lifestyle change, ranging from recycling and purchasing 'green'
products, to reduced consumption and dietary changes. The tactics have clear-
ly broadened and will likely continue to do so.

Finally, social movements can be distinguished by their opposition and the
source of their grievances. Usually these are related, for those who benefit from
environmentally harmful practices are most likely to oppose attempts to halt
those practices. As our understanding of ecological problems has progressed,
so has recognition of their embeddedness in the status quo. No longer are just
a few 'robber barons' to blame for our problems; rather, we are essentially all
responsible for contributing to environmental problems.

Conservationism laid the blame for resource depletion at the feet of a rela-
tively small group of people, and thereby stimulated limited opposition. Envi-
ronmentalism, in contrast, blamed entire industries, modern lifestyles and
'growthmania' in general, and in the process engendered broader opposition.
Ecologism issues a critique that leaves few unscathed, for our entire species
and the status quo (at least within industrialised nations) are to blame, albeit
some aspects moreso than others. Simply reforming current practices via legis-
lation is therefore unlikely to suffice. As a simple example, rather than

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57   Mitchell, Mertig, and Dunlap, "Twenty Years of Environmental Mobilization."

favouring installation of scrubbers on factory smokestacks to reduce pollutants, advocates of ecologism argue for alternative production techniques or giving up the product completely. Because the economic and social costs of halting human-induced environmental change could prove enormous, and leave little of modern life untouched, ecologism has the potential of stimulating enormous opposition.

5   Ecologism and Global Climate Change

Global climate change represents one of the most, if not the most, encompassing environmental problems faced by humanity. As noted above, it fits squarely within the emerging perspective of 'ecologism.' The environmental movement has been criticised heavily, especially from within its own ranks, for not doing enough to address global climate change.[58] The political partisanship that has invaded environmental issues in the US since the 1980s has been especially pronounced in debates over global climate change, with Republicans nearly unilaterally opposing efforts at mitigation. Coupled with the adversarial nature of the political system in the US, this partisanship has essentially stymied strong, comprehensive environmental movement activity in this arena.[59] Environmental organisations, according to Bryner,[60] have been well-suited for addressing fairly specific environmental problems and blocking bad policies but they have been largely incapable of pushing a larger agenda or in tackling the major social transformation that would be required to address "energy production and use, the major driver of modern life".

However, the environmental movement has played a substantial role in keeping the issue in front of policy makers and the public. The movement was first engaging issues of global climate change in the 1970s, as scientists were increasingly positing that humans could have a substantial impact on Earth's

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58   Shellenberger, Michael, and Ted Nordhaus, "The Death of Environmentalism: Global Warming Politics in a Post-Environmental World," published 2004, accessed March 1, 2013. www.thebreakthrough.org/images/Death_of_Environmentalism.pdf; see also Brick, Philip, and R. McGreggor Cawley, "Producing Political Climate Change: The Hidden Life of US Environmentalism," *Environmental Politics* 17.2 (2008): 200–218; Bryner, Gary, "Failure and Opportunity: Environmental Groups in US Climate Change Policy," *Environmental Politics* 17.2 (2008): 319–336.

59   Bryner, "Failure and Opportunity."

60   Ibid., 330.

climate.[61] Environmental organisations were instrumental in taking scientific information and disseminating it to the public, gradually increasing public awareness of this issue. There is evidence that environmental organisations (as well as other advocates such as Al Gore) have played an important role in fashioning public opinion with regard to global climate change[62] and 'framing' the debate to make the issue more accessible to the lay public.[63] Framing activities, combined with traditional movement activity, are absolutely essential for providing "a more diverse foundation for developing future strategies".[64]

In addition to the important but often 'hidden' framing activities of the movement,[65] groups within the movement have been extensively involved in efforts to change policy and behaviours, often at the sub-national level.[66] Several organisations have incorporated global climate change as a central issue, have been involved in international climate change negotiations, and have engaged in alliances with states, communities, businesses and labour unions to address climate change issues. As Moser[67] notes, "momentum is quietly building in the shadow of federal inaction". While the movement has not been successful at prompting federal action on global climate change, it has been successful in building up 'grassroots' activity at other levels. Indeed, scholars have discerned the emergence of a new 'climate justice' movement.[68] This movement attempts to incorporate the mainstream discourse of environmentalism with a focus on social justice issues—a combination that fits even more squarely into the 'ecologism' frame noted above. Jamison[69] even notes that this new movement is marked by a greater willingness to engage in civil disobedience and direct action. In fact, the Sierra Club, one of the oldest environmental organisations in the US, recently decided to take part in its first act of civil disobedience—an act meant to target global climate change by engaging

61   Moser, Susanne C., "In the Long Shadows of Inaction: The Quiet Building of a Climate Protection Movement in the United States," *Global Environmental Politics* 7.2 (2007): 124–144; Jamison, Andrew, "Climate Change Knowledge and Social Movement Theory," *Wiley Interdisciplinary Reviews-Climate Change* 1.6 (2010): 811–823.

62   Brulle, Robert J., Jason Carmichael, and J. Craig Jenkins, "Shifting Public Opinion on Climate Change: An Empirical Assessment of Factors Influencing Concern over Climate Change in the U.S., 2002–2010," *Climatic Change* 114.2 (2012): 169–188.

63   Brick, and Cawley, "Producing Political Climate Change."

64   Ibid., 216.

65   Ibid.,

66   Moser, "In the Long Shadows of Inaction."

67   Ibid., 140.

68   Ibid.; Jamison, "Climate Change Knowledge."

69   Jamison, "Climate Change Knowledge."

in deliberately unlawful trespass to protest the construction of the Keystone XL oil pipeline.[70]

6   Conclusions

In 1892, the fledgling Sierra Club held as its motto "to explore, enjoy, and render accessible the mountain regions of the Pacific Coast […] to enlist the support and cooperation of the people and the government in preserving the forests and other natural features of the Sierra Nevada Mountains".[71] Currently, the Sierra Club's motto is to "Explore, Enjoy and Protect the *Planet*" (emphasis added).[72] This transformation amply demonstrates the extent to which the American Environmental Movement has broadened its slate of concerns and become active in global issues. Although local, regional and national issues are still addressed by organisations and activists within the movement, the movement has become integrally connected to and involved in issues of planetary significance. Global climate change, as well as issues such as biodiversity loss, has been an especially powerful impetus in this regard. The Sierra Club, for instance, has developed an "International Climate Program". The Sierra Club is, of course, not alone in exhibiting this transformation. Numerous environmental organizations in the US have developed international programs while many of the newer ones developed explicitly with international agendas (e.g., Conservation International). Even newer organizations (like, for example, 350.org) have developed explicitly as internationally focused organizations addressing global climate change. Perhaps the time has come when we can reference the movement as the Global Environmental Movement rather than referring to— aside from historical accounts—an American or any other national level environmental movement. Of course, the American environmental movement, as with any national level phenomenon, has always influenced and been influenced by international factors (for example, the influence of European romantics in the 1800s, the development of international treaties in the 1970s), despite

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70   Merritt, Judith Lewis, "Sierra Club Fights Keystone XL with Civil Disobedience," *High Country News*, February 18, 2013, accessed February 22, 2013. http://www.hcn.org/issues/45.3/sierra-club-fights-keystone-xl-with-civil-disobedience.

71   Sierra Club, "About the Sierra Club," accessed April 5, 2014. http://www.sierraclub.org/aboutus/.

72   Ibid.

our prior attempts to compartmentalise.[73] We are, however, now at a juncture when the global nature of environmentalism is much more palpable.

In sum, the environmental movement has come a long way both organisationally and ideologically. What was early on a movement of conservationists and preservationists has expanded into a movement of environmentalists, ecologists and global climate change activists. As environmental problems have become apparently more complex, it has had to evolve to tackle ever more nebulous and potentially devastating issues. While observers may feel that the movement has not had great success lately, we need to keep in mind that successful movements wax and wane. Successful movements, while outwardly declining, are often working 'behind the scenes', building alliances and framing issues. Ultimately, these activities help to pave the way for future, more large-scale successes—and that is what is needed if we are going to successfully challenge global climate change.

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73   Tyrell, Ian, "American Exceptionalism in an Age of International History," *The American Historical Review* 96.4 (1991): 1031–1055.

The Role of Norms in US Foreign Climate Policy

Frederic Hanusch

Abstract

This chapter analyses the role which domestic and international norms and their respective socialisation processes play in the determination of a state's foreign policy. It therefore focuses on the empirical case of US foreign climate policy from its start in 1972 up until 2005. After developing a theoretical framework based on the concept of social constructivism in political science, the analysis is carried out over two distinct periods of time, each time period representing a new phase of international climate negotiations.

The results of the analysis are twofold: Firstly, norms within climate policy work as determinants and thus define how much a government can manoeuvre on any given theme. Socialisation processes, meanwhile, are able to push a government slightly in one direction or another. Additionally, a predominance of domestic norms with a stronger domestic socialisation can be observed in the case of US foreign climate policy—albeit, particularly since the 1990s, the phenomenon of a polarised domestic response to climate policy is immediately observable. To sum up the findings, this chapter uses the results of the foreign policy analysis as a framework for creating a norm-stage-model that looks to map formations and back-formations of climate norms onto other democracies.

1 Introduction

Climate change, discovered years ago as a natural science phenomenon, now applies pressure to societies, nation states and the international community to act upon environmental issues and has subsequently become an issue of interest to the social sciences. Regardless of the scientific evidence, it can be observed that different states vary significantly in how they act to meet the growing challenges of climate change.[1] The most prominent case of a

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1 Dessler, Andrew E., and Edward A. Parson, *The Science and Politics of Global Climate Change* (Cambridge: Cambridge University Press, 2006).

democracy, with significant meandering between the conclusions of scientific evidence and subsequent state policy, is the US.[2] This contribution takes a look at the case of the US, and sees climate change as "a problem that, by its very nature, crosses over between the domestic and international arenas of politics and policymaking".[3] Therefore, a social constructivist foreign policy theory, as a perspective of understanding capturing both arenas, is applied. This chapter asks: What role have international and domestic norms and their associated socialisation processes played in shaping US foreign climate policy since 1972 until 2005? The answer, presented throughout the following pages, shows that norms act as metaphysical restraints, defining the accepted limits of political manoeuvring. The analysis also shows that domestic norms are particularly predominant in US foreign climate policy.

2   Theory

2.1   Social Constructivism as a Middle Ground

The following criteria, starting with their meta-theoretical foundations, share most of the constructivist theories of international relations as common ground.[4] The ontological constructivists follow an approach that can be described in four points: Firstly, because the social world consists of inter-subjective understandings, subjective knowledge and material objects, an interplay between material and immaterial objects exists. Secondly, social

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2   Harris, Paul G., "Climate Change and Foreign Policy: An Introduction," in *Climate Change and American Foreign Policy*, ed. Paul G. Harris (New York: Palgrave MacMillan, 2000), 3–25.

3   Harris, Paul G., "Climate Change in Environmental Foreign Policy," in *Climate Change and Foreign Policy: Case Studies from East to West*, ed. Paul G. Harris (London, New York: Routledge, 2009), 2.

4   Adler, Emanuel, "Constructivism and International Relations," in *Handbook of International Relations*, ed. Walter Carlsnaes, Thomas Risse and Beth A. Simmons (London, Thousand Oaks, New Delhi: Sage Publications Ltd, 2002), 95–118; Carlsnaes, Walter, "The Agency-Structure Problem in Foreign Policy Analysis," *International Studies Quarterly* 36.3 (1992): 245–270; Hurd, Ian, "Constructivism," in *The Oxford Handbook of International Relations*, ed. Christian Reus-Smit and Duncan Snidal (New York: Oxford University Press 2008), 298–316; Pettenger, Mary E., "Introduction: Power, Knowledge and the Social Construction of Climate Change," in *The Social Construction of Climate Change*, ed. Mary E. Pettenger (Hampshire, Burlington: Ashgate Publishing 2007), 1–19; Ulbert, Cornelia, "Konstruktivistische Analysen der internationalen Politik," in *Konstruktivistische Analysen der internationalen Politik*, ed. Cornelia Ulbert (Wiesbaden: vs Verlag für Sozialwissenschaften, 2005), 9–34; Wendt, Alexander, "The Agent-Structure Problem in International Relations Theory," *International Organization* 41.3 (1987): 335–370.

facts are dependent on human characteristics, such as language and conscious-ness, and can only imbue physical objects with meaning through these con-structs of prior understanding. Thirdly, actors are integrated in extant structures that then form a framework for action. Fourthly, a co-constitution between ac-tor and structure exists, since both are dependent upon each other and can influence and change one another. Nevertheless, for the purposes of investiga-tion, constructivists assume that actors and structures temporarily solidify; thus it is understood that they are only subject to sequential changes, these occurring on a temporary as opposed to permanent basis.

Methodologically, constructivists use a wide range of assumptions and methods: "[t]here is no single constructivist method or research design".[5] Thus, the analytical methods of a constructivist approach are a means to an end, intended to identify inter-subjective content, social structures and the ac-tors within social processes.[6]

This analysis follows a social constructivist approach, which, as a moderate version of constructivism, occasionally overlaps into positivism and rational-ism—the so-called 'middle ground', developed by Emanuel Adler.[7] This social constructivist perspective occupies the "middle ground between rationalist approaches (whether realist or liberal) and interpretative approaches (mainly postmodernist, poststructuralist and critical)"[8] by having the view that "the manner in which the material world shapes and is shaped by human action and interaction depends on dynamic normative and epistemic interpretations of the material world".[9]

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5   Finnemore, Martha, and Kathryn Sikkink, "Taking Stock: The Constructivist Research Program in International Relations and Comparative Politics," *Annual Review of Political Science* 4.1 (2001): 396.

6   Adler, "Constructivism and International Relations," 101.

7   Risse, Thomas, "Konstruktivismus, Rationalismus und Theorien Internationaler Beziehungen – warum empirisch nichts so heiß gegessen wird, wie es theoretisch gekocht wurde," in *Die neuen internationalen Beziehungen: Forschungsstand und Perspektiven in Deutschland*, ed. Gunther Hellmann, Klaus-Dieter Wolf and Michael Zürn (Baden-Baden: Nomos, 2003), 100; Ulbert, "Konstruktivistische Analysen," 12; Weller, Christoph, "Perspektiven eines refelexiven Konstruktivismus für die internationalen Beziehungen," in *Konstruktivistische Analysen der internationalen Politik,* ed. Cornelia Ulbert and Christoph Weller (Wiesbaden: vs Verlag für Sozialwissenschaften, 2005), 49.

8   Adler, "Constructivism and International Relations," 319.

9   Adler, Emanuel, "Seizing the Middle Ground: Constructivism in World Politics," *European Journal of International Relations* 3.3 (1997), 322, emphasis in original.

2.2   *Social Constructivist Foreign Policy Theory*

Since the concept of the 'middle ground' is not directly empirically applicable and is rather a meta-theoretical point of view, a framework for empirical analysis is required.

The approach used in this analysis has to be suitable for the research of foreign climate policy. Therefore, an approach closely related to the one developed by Henning Boekle, Volker Rittberger, and Wolfgang Wagner is applied.[10] It follows an actor concept of a 'homo sociologicus'. Norms are for the 'homo sociologicus' not just intentional products of strategic action, but rather part of a logic of appropriateness.[11]

Norms as explanatory factors can be defined as "inter-subjectively shared, value-based expectations of appropriate behaviour".[12] To differentiate norms from other ideational factors, a summary of the three main characteristics of norms may be helpful:[13] Firstly, inter-subjectivity means that actors cannot always determine their behaviour based solely upon individual beliefs, instead they have to stay in close contact and interaction with their social environment. Secondly, the social surroundings of any actor formulate a set of expectations as regards the actors' behaviour. These intrinsic behavioural expectations can be seen in the domestic responses to the actor's actions: typically those actions perceived as conforming to their normative expectations will be greeted, whereas those seen to be at odds with these expectations will immediately be shunned. Thirdly, counterfactual validity deals with the deontological quality of norms, which means that they are also existent when they are

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10   Boekle, Henning, Volker Rittberger, and Wolfgang Wagner, "Constructivist Foreign Policy Theory," in *German Foreign Policy Since Unification*, ed. Volker Rittberger (Manchester, New York: Manchester University Press, 2001), 105–138.

11   Checkel, Jeffrey T., "The Constructivist Turn in International Relations Theory," *World Politics* 50.2 (1998): 326; Deitelhoff, Nicole, *Überzeugung in der Politik: Grundzüge einer Diskurstheorie internationalen Regierens* (Frankfurt: Suhrkamp Verlag, 2006), 12, 52–78; Fearon, James, and Alexander Wendt, "Rationalism v. Constructivism: A Skeptical View," in *Handbook of International Relations*, ed. Walter Carlsnaes, Thomas Risse and Beth A. Simmons (London, Thousand Oaks, New Delhi: Sage Publications Ltd, 2002), 60.

12   Boekle, Rittberger, and Wagner, "Constructivist Foreign Policy Theory," 106.

13   Boekle, Henning, Volker Rittberger, and Wolfgang Wagner, "Normen und Außenpolitik: Konstruktivistische Außenpolitiktheorie," accessed September 5, 2012. http://tobias-lib.uni-tuebingen.de/volltexte/2000/141/pdf/tap34.pdf, 6; Boekle, Rittberger, and Wagner, "Constructivist Foreign Policy Theory," 107–108; Deitelhoff, *Überzeugung in der Politik*, 38–39; Nagtzaam, Gerry, *The Making of International Environmental Treaties: Neoliberal and Constructivist Analysis of Normative Evolution* (Glos: Edward Elgar Publishing, 2009).

violated. If a norm is violated, the actor has to explain the violation since an inter-subjective commitment has been violated.

The strength of norms and thus their influence on foreign policy behaviour is determined by their commonality and specificity.[14] The degree of commonality can be measured by the number of units supporting a social norm. The criterion of specificity asks how precisely a social norm can differentiate between appropriate and inappropriate behaviour.

Even though the differentiation between different levels becomes increasingly insignificant, a separation seems to make sense for analytical purposes, especially for the historical perspective of this chapter. Thus, norms can influence foreign policy at an international as well as at a national level, and this is why the social constructivist foreign policy theory separates between both analytically.[15]

The transnational level of analysis assumes that international norms, as expectations of appropriate behaviour relevant to the US, also have a guiding transnational influence through international society, social subsystems and international institutions.[16] The identification of norms by indicators tries to find value-based expectations of appropriate behaviour for reasons of operationalisation. The indicators therefore should concentrate on a particular policy subfield and fulfil the criteria of communality and specificity.[17] Indicators of international norms are general international laws, legal acts of international organisations and the final acts of international conferences.[18] Thereby, the focus rests not so much on the technical character of the treaties but on the propagated norms, which they display in their constitution.

The national element of the social constructivist foreign policy theory indicates the dependence of foreign policy on the norms of domestic societies, its subgroups and an inside-outside-analogy. This inside-outside-analogy assumes that societies try to organise their foreign policy procedures in a similar fashion to their domestic policies.[19] Indicators of national norms can be found

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14   Boekle, Rittberger, and Wagner, "Constructivist Foreign Policy Theory," 108–109; Finnemore, Martha, and Kathryn Sikking, "International Norm Dynamics and Political Change," in *International Organization* 52.4 (1998): 901.

15   Boekle, Henning, Volker Rittberger, and Wolfgang Wagner, "Soziale Normen und normgerechte Außenpolitik – Konstruktivistische Außenpolitiktheorie und deutsche Außenpolitik nach der Vereinigung, in *Zeitschrift für Politikwissenschaft* 11.3 (2001): 82.

16   Boekle, Rittberger, and Wagner, "Constructivist Foreign Policy Theory," 116–121.

17   Boekle, Rittberger, and Wagner, "Soziale Normen und normgerechte Außenpolitik," 21.

18   Boekle, Rittberger, and Wagner, "Constructivist Foreign Policy Theory," 124–128.

19   Boekle, Rittberger, and Wagner, "Soziale Normen und normgerechte Außenpolitik," 20–21.

in four sources: the constitutional and legal order of a society, party political programs and platforms, parliamentary activities and survey data.[20]

The intervening process between norms and foreign policy behaviour under the logic of appropriateness has to be seen in a socialisation mechanism that can either take place at an international level in a transnational direction or at a national level and in a societal direction.[21] Due to this socialisation process norms can have a constitutive—forming the behaviour of an actor—as well as a regulative—restricting the behaviour of an actor—effect.[22] Foreign policy decision makers—who are subject to the internalisation of norms—are always in an area of tension between domestic[23] and transnational socialisation since they represent the interface between the domestic and the international policy system.[24] Transnational socialisation takes place in the international society, international organisations and advocacy coalitions. Domestic socialisation is characterised by the society as well as by partial groups of the society, primarily advocacy coalitions, which transport expectations of appropriate behaviour to foreign policy decision makers.[25]

An analysis of foreign policy needs therefore to recognise both the national as well as the international elements present in determining behavioural patterns, respectively their related domestic socialisation processes, since a state acts as it does due not to one or the other alone, but rather as a result of a conglomeration of both factors.

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20   Boekle, Rittberger, and Wagner, "Constructivist Foreign Policy Theory," 128–132.

21   Boekle, Rittberger, and Wagner, "Normen und Außenpolitik," 77; Schimmelfennig, Frank, "Internationale Sozialisation: Von einem ‚erschöpften' zu einem produktiven Forschungs-programm?," in *Die neuen Internationalen Beziehungen: Forschungsstand und Perspektiven in Deutschland*, ed. Gunther Hellmann, Klaus-Dieter Wolf and Michael Zürn (Baden-Baden: Nomos, 2003), 410; Schimmelfennig, Frank, Stefan Engert and Heiko Knobel, *International Socialization in Europe: European Organizations, Political Conditionality and Democratic Change* (Hampshire, New York: Palgrave, 2006), 2.

22   Boekle, Rittberger, and Wagner, "Soziale Normen und normgerechte Außenpolitik," 9; Dessler, David, "What's at Stake in the Agent-Structure Debate?" in *International Organization* 43.3 (1989): 454–458; Finnemore, and Sikking, "International Norm Dynamics," 891.

23   Boekle, Rittberger, and Wagner, "Constructivist Foreign Policy Theory," 111, use the tautological term "societal socialisation". This chapter prefers to use the term "domestic socialisation" interchangeably to prevent confusion between domestic and transnational socialisation since societal actors also intervene at the transnational level.

24   Boekle, Rittberger, and Wagner, "Normen und Außenpolitik," 77, footnote 8.

25   Ibid., 79.

3   The Case of the US

This investigation is based on a methodological approach taken from an analysis of documentary and secondary literature and organised into two time periods as follows: first, the indicators at the national and the international level will be identified as explanatory factors (norms) and intervening processes (socialisation). Secondly, the foreign climate policy behaviour of the US will be described and then addressed through the identified indicators in a brief preliminary conclusion.

3.1   *The Way to the UNFCCC (1972–1994)*

As already mentioned, *domestic norms* can be found in the constitutional and legal order of a society, thus we need to observe the most prominent laws enacted within the first time frame. A first law contributing to the earliest framing of climate politics is the Air Pollution Control Act of 1955. The goal of this law was to deter air pollution through the promotion of research and development.[26] In 1963, the law was replaced by the Clean Air Act.[27] The intended central goals were to protect the health of the population by sensitising the industrial branches responsible for polluting practices.[28] The National Environmental Policy Act of 1969 includes a preamble, stating that the human is the focal point of environmental politics and that the protection of natural resources is focused on the importance they have for the nation. The Energy Policy and Conservation Act from 1975 has to be seen as a reaction to the oil embargo of 1973–1974, focusing as it does on fuel consumption by defining the distance a car needs to be able to achieve on one gallon.[29] The Global Climate Protection Act of 1987 handed over a leading role regarding national climate issues to the Environmental Protection Agency (EPA).[30] It included goals regarding internationally coordinated climate research, the identification of

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26   Martel, Jonathan S., and Stelcen, Kerri L., "Clean Air Regulation," in *Global Climate Change and U.S. Law*, ed. Michael B. Gerrard (Chicago: American Bar Association, 2007), 134; Legal Information Institute, "§ 7401: Congressional Findings and Declaration of Purpose," accessed September 5, 2012. http://www.law.cornell.edu/uscode/text/42/7401.

27   Martel, and Stelcen, "Clean Air Regulation," 134–136.

28   Findley, Roger W., and Daniel A. Farber, *Environmental Law* (St. Paul: Thomson/West, 2008), 97–131; Martel, and Stelcen, "Clean Air Regulation," 136.

29   Dernbach, John C., "U.S. Policy," in *Global Climate Change and U.S. Law,* ed. Michael B. Gerrard (Chicago: American Bar Association, 2007), 69–70; Martel, and Stelcen, "Clean Air Regulation," 155–157.

30   Dernbach, "U.S. Policy," 72.

technologies promoting emission reduction and the elaboration of an international agreement.

To investigate a second domestic indicator, the analysis will take a look at elections, namely party political programs produced for these occasions. The Democratic electoral programmes produced between 1972 and 1992 related the environment closely to technologies, jobs and resources, and developed an ever-stronger tendency of seeing economic and environmental goals as being compatible. Therefore, they promoted scientific research, favoured international cooperation and took a leading role in the contemplation of the greenhouse effect, developing an approach in favour of responsible behaviour in respect to the environmental inheritance of future generations.[31]

The Republican Party Platform instead argued that there must be a "workable balance between economy and environmental protection", whereby environment and economy were seen as two incompatible issues.[32] In 1980, they encouraged technological research to support an economy that should have enough space to grow "in an acceptable environment".[33] Four years later, environmental protection was scaled down even more, as the contemporary quality of life for citizens became the highest goal of politics.[34] In 1988, the formulation of environmental policy was offensive and holistic, i.e. economic growth should respect a sustainable use of the environment to hand over the environment in a better condition to future generations.[35] In the electoral

31   Democratic Party, "Democratic Party Platform of 1972," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=29605; Democratic Party, "Democratic Party Platform of 1976," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=29606; Democratic Party, "Democratic Party Platform of 1980," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=29607; Democratic Party, "Democratic Party Platform of 1984," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=29608; Democratic Party, "Democratic Party Platform of 1988," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=29609; Democratic Party, "Democratic Party Platform of 1992," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=29610.

32   Republican Party, "Republican Party Platform of 1972," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=25842; Republican Party, "Republican Party Platform of 1976," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=25843.

33   Republican Party, "Republican Party Platform of 1980," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=25844.

34   Republican Party, "Republican Party Platform of 1984," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=25845.

35   Republican Party, "Republican Party Platform of 1988," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=25846.

program of 1992, the Republicans' Party Platform was once again more moderate and "private ownership and economic freedom [became] [...] the best security against environmental degradation".[36]

Legislative activities indicate that climate change was not seen as a political problem until the mid 1980s.[37] Senator John Chafee initiated the first hearing in the Senate in 1986.[38] In a hearing of the energy committee in 1988, NASA expert James Hansen stated in summing up, that it was 99 percent certain that a man-made climate change existed. This statement was at first deemed to be very controversial and the scientific results were held to be highly dubious, particularly by those of a Republican persuasion.[39] Even after the Democrat Bill Clinton became President, his 'National Action Plan' of 1993 faced substantial resistance.[40] This opposition became even stronger when the Republican Party achieved a majority in the Congress of 1994.[41]

Surveys carried out between 1986 and 1991 show "that public concern for environmental quality ha[d] reached an all-time high".[42] This positive attitude also existed in regard to environmental action involving financial outlay.[43] Another perspective can, however, be obtained from a survey in 1990, where environmental problems had to be ranked from most important to least important, and where climate change came in in last place with only 30 percent.[44] In a survey in 1994, 28 percent said they saw climate change as scientifically verified, whereas 58 percent interpreted the research as being divided and

36   Republican Party, "Republican Party Platform of 1992," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=25847.

37   Cass, Loren R., *The Failures of American and European Climate Policy* (Albany: State University of New York Press, 2006), 30.

38   Topping, John C, "U.S. Law and Public Policy Concerning Global Warming," in *Policies and Laws on Global Warming: International and Comparative Analysis*, ed. Turu Iwama (Tokyo: Environmental Research Center, 1991), 136–137.

39   Ibid., 123–124.

40   Bryner, Gary, "Congress and the Politics of Climate Change," in *Climate Change and American Foreign Policy*, ed. Paul G. Harris (New York: Palgrave MacMillan, 2000), 114.

41   Deutsch, Klaus, "Emissionshandel in Amerika: Die US-Klimapolitik am Scheideweg," accessed September 5, 2012. http://www.banking-on-green.de/docs/emissionshandel_amerika.pdf, 142.

42   Dunlap, Riley E., and Rik Scarce, "Poll Trends: Environmental Problems and Protection," in *Public Opinion Quarterly* 55.4 (1991): 657.

43   Ibid., 666.

44   The Pew Research Center for the People and the Press, "Americans Support Action On Global Warming: Progress Seen On AIDS, Jobs, Crime and the Deficit," accessed September 5, 2012. http://people-press.org/report/100/americans-support-action-on-global-warming.

8 percent saw no substantial evidence.[45] Survey data then indicate no clear domestic relationships to climate change and subsequently no normative conclusions can be drawn from the information they provide.

Domestic socialisation was at first very much shaped by epistemical communities, whereby advocacy coalitions gradually gained more and more influence in policy formulation. It was in the mid 1980s that climate change first started to come to the attention of the national media and of society at large, mainly because of a report released by the EPA and the National Academy of Sciences.[46] However, even though the Department of Energy, the US National Academy of Sciences and the Global Change Research Program undertook a lot of research at the end of the 1980s, no policy recommendations were seriously considered at any elevated policy level. A combination of a heat wave, forest fires and considerable dryness in the midwest in 1988, did however lead to an increased public sensibility and conferences regarding climate change.[47] Yet an advocacy alliance centred on the Global Climate Coalition, a group of the biggest American firms in the sectors of oil, chemistry, transport, iron and steel, continued to exert considerable influence on the inner societal debate and its equivalents held within Congress.[48] The group used its economic power to influence national norms and ensured that they ultimately led to no commitments to emission reductions. The group drew attention to scientific uncertainties and published an analysis arguing that a 20 percent emission reduction would cost 95 billion dollars. In the White House, a person closely related to the group, John H. Sununu, saw absolutely no need for any climate action and helped to disseminate the thinking of the group into daily politics.[49] Moreover, the Global Climate Coalition influenced media discourse and members of Congress.[50] This merger resulted in a discussion before the United

45   Program on International Policy Attitudes (PIPA)/Knowledge Network, "Americans on Climate Change: 2005," accessed September 5, 2012. www.pipa.org/OnlineReports/ ClimateChange/ClimateChange05_Jul05/ClimateChange05_Jul05_rpt.pdf, 4.

46   Cooper, Chester L., "The CO_2 Challenge," in *Science for Public Policy*, ed. Harvey Brooks and Chester L. Cooper (Oxford: Pergamon Press, 1987), 203–204.

47   Moser, Susanne C., "In the Long Shadows of Inaction: The Quiet Building of a Climate Protection Movement in the United States," in *Global Environmental Politics* 7.2 (2007): 131–132; Park, Jacob, "Governing Climate Change Policy," in *Climate Change and American Foreign Policy*, ed. Paul G. Harris (New York: Palgrave MacMillan, 2000), 80.

48   Betsill, Michele M., "The United States and the Evolution of International Climate Change Norms," in *Climate Change and American Foreign Policy*, ed. Paul G. Harris (New York: Palgrave MacMillan, 2000), 215; Cass, *The Failures*, 125.

49   Ibid., 214; Topping, "U.S. Law and Public Policy," 123–124.

50   Betsill, "The United States and Norms," 218.

Nations Framework Convention on Climate Change (UNFCCC) negotiations that saw climate change becoming only acceptable in favourable economic circumstances.[51] In our first time period, there was then no climate friendly advocacy coalition—'climate-friendly' means actively avoiding climate change on the scientific basis of the IPPC—which was able to achieve any significant influence upon policy making.

The first two indicators of the *transnational level* are the general international laws and legal acts of international organisations. International environmental principles have their first roots in the United Nations Conference on the Human Environment 1972.[52] More specific forms of these indicators can be found in the UN resolution 43/53 "Protection of Global Climate for Present and Future Generations of Mankind" from December 6, 1988, which

> [u]rges Governments, intergovernmental and non-governmental organisations and scientific institutions to treat climate change as a priority issue, to undertake and promote specific, co-operative action-oriented programmes and research so as to increase understanding on [the] sources and causes of climate change, including its regional aspects and specific time-frames, as well as the cause and effect relationship of human activities and climate [change], and to contribute, as appropriate, with human and financial resources to efforts to protect the global climate.[53]

As international law presently has no binding character for concrete policies, negotiating delegations usually make use of 'umbrella treaties' for further negotiations.[54] The most important of these umbrella treaties is the UNFCCC, which came into force after the 50th ratification in 1994. The goal of the UNFCCC is to stabilise greenhouse gases (GHG) in the atmosphere in order to prevent dangerous anthropogenic interference with the climate system (art. 2), whereby lawyers see the connotation of "dangerous" as a rule of interpretation

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51   Betsill, "The United States and Norms," 214–215.

52   Verheyen, Roda, "Der Beitrag des Völkerrechts zum Klimaschutz – Globale Aufgabe, globale Antworten?" in *Klimaschutz im Recht*, ed. Harald Barrios and Christoph H. Stefes (Baden-Baden: Nomos, 1997), 31–32.

53   United Nations General Assembly, "Protection of Global Climate for Present and Future Generations of Mankind," accessed September 5, 2012. http://www.un.org/documents/ga/res/45/a45r212.htm.

54   Verheyen, "Der Beitrag des Völkerrechts," 31.

with no material context.[55] Furthermore, the UNFCCC includes five principles in art. 3, paragraphs 1–5, which have to be seen as being the normative foundations of the treaty:[56] the first principle is the polluter pays principle that is applied mainly at a national level, but is expanded upon internationally by the 'common but differentiated responsibilities' principle. The second principle respects the special needs and circumstances of developing countries. The third principle focuses on precautionary measures regarding climate change even under unclear scientific circumstances.[57] Principles four and five focus again on sustainable development, yet they are very vague.[58] The character of the UNFCCC as an umbrella treaty can explain the high number of ratifications and the practical usefulness of such a 'package-deal' can be seen in the fact that it brings all parties together in one procedural action framework.[59] The negotiations in the following time period showed that a treaty with concrete numbers for reduction was very hard to achieve.[60] The central measures are national reports, the development of climate relevant technologies, sustainable cultivation, climate research and educating the populace at large in respect to climate protection.[61] Moreover, art. 4, paragraph 2 indicates the leading role of developed states.[62]

The final acts of international conferences in this first time period can be seen in three representative conferences: Firstly, the World Meteorological Organisation's conference, the First World Climate Conference, introduced climate change to the international research agenda and founded the World Climate Program. After a few years the researchers then formulated their findings in their final report, stating that "the understanding of the greenhouse question is sufficiently developed that scientists and policy makers should begin an active collaboration to explore the effectiveness of alternative policies and adjustments".[63] Climate change was subsequently transformed from a

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55   Beyerlin, Ulrich, *Umweltvölkerrecht* (München: C.H. Beck, 2000), 174; Verheyen, "Der Beitrag des Völkerrechts," 39–40.

56   Verheyen, "Der Beitrag des Völkerrechts," 40–41.

57   Beyerlin, *Umweltvölkerrecht*, 60; Verheyen, "Der Beitrag des Völkerrechts," 41.

58   Verheyen, "Der Beitrag des Völkerrechts," 42.

59   Beyerlin, *Umweltvölkerrecht*, 42; Verheyen, "Der Beitrag des Völkerrechts," 38.

60   Beyerlin, *Umweltvölkerrecht*, 153.

61   Ibid., 174; Verheyen, "Der Beitrag des Völkerrechts," 43–44.

62   Beyerlin, *Umweltvölkerrecht*, 174–175.

63   World Meterological Association, *Report of the International Conference on the Assessment of the Role of Carbon Dioxide and of Other Greenhouse Gases in Climate Variations and Associated Impacts*, Villach, Austria, 9–15 October 1985 (WMO No.661),

scientific into a political problem.[64] Secondly, the Toronto Conference on the Changing Atmosphere in 1988 formulated the goal to reduce emissions by 20 percent before 2005 and led to the foundation of an FCCC and a World Atmosphere Fund.[65] Thirdly, the climate conference in Noordwjik in 1989 shows the first acceptance of the necessity to reduce GHG at an international level:

> Industrialised nations agreed that [the] […] stabilisation [of GHG] should be achieved by them as soon as possible, at levels to be considered by the IPCC and the Second World Climate Conference of November 1990.[66]

The *transnational socialisation* did not exist at the beginning of this phase, because climate change did not have enough significance. However, as the UNFCCC encouraged civic participation by introducing the possibility for non-governmental organisations (NGOs) to participate in the treaty, a wide range of NGOs dealing with climate change were founded at the beginning of the 1990s.[67]

The *foreign climate policy of the US administrations* in the first time period started under President Carter, who was interested in the impact of human action upon the environment. Carter's interest then led to the foundation of the National Climate Program Act in 1978. The impact of this progression was then, however, limited by President Reagan who instead cut down research on climate change and claimed that economic primacy was compatible with environmental protection.[68]

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accessed August 27, 2013. www.scopenvironment.org/downloadpubs/scope29/statement.html.

64   Paterson, Matthew, *Global Warming and Global Politics* (London, New York: Routledge, 1996), 30–32.

65   Verheyen, Der Beitrag des Völkerrechts, 36.

66   Information Unit on Climate Change, "The Noordwijk Ministerial Declaration on Climate Change," accessed September 5, 2012. unfccc.int/resource/ccsites/senegal/fact/fs218.htm.

67   Brühl, Tanja, *Nichtregierungsorganisationen als Akteure internationaler Umweltverhandlungen: Ein Erklärungsmodell auf der Basis der situationsspezifischen Ressourcennachfrage* (Frankfurt, New York: Campus, 2003), 109; Beisheim, Marianne, *Fit für Global Governance? Transnationale Interessengruppenaktivitäten als Demokratisierungspotential – am Beispiel Klimapolitik* (Opladen: VS Verlag für Sozialwissenschaften, 2004), 235–290; Cass, The Failures, 19.

68   Fisher-Vanden, Karen, "International Policy Instrument Prominence in the Climate Change Debate," in *Climate Change and American Foreign Policy*, ed. Paul G. Harris (New York: Palgrave MacMillan, 2000), 152; Park, "Governing Climate Change Policy," 79–80; Topping, "U.S. Law and Public Policy," 123.

A change of approach was to be seen under the new administration of President George H.W. Bush. His Secretary of State, James Baker, made his position clear, stating: "[W]e can probably not afford to wait until all of the uncertainties have been resolved before we do act. [...] Time will not make the problem go away."[69] This position was, however, only assumed at the very beginning of his presidency, as the climate change denialist John H. Sununu—a man with close relations to the Global Climate Coalition—became the White House's chief of staff and coordinated climate politics.[70] Nevertheless, President Bush argued in favour of a more active climate policy at a United Nations Environment Programme (UNEP) meeting in 1989.[71] Yet the administration argued that no steps should be taken until scientific evidence existed. The IPCC therefore took a leading role in the subsequent research. The administration's inconsistencies were also visible at the climate conference of 1989 in Noordwijk.[72] And in the years thereafter, the government always argued at international negotiations that one had to respect economic needs.[73] The position of the US administration before the United Nations Conference on Environment and Development (UNCED) was framed by a rejection of binding reduction targets, a concentration on the economic risks of reducing GHG, the need for more research, a better inclusion of developing countries in the reduction targets and a drive for flexible mechanisms.[74] After President Clinton came into office, his administration was in favour of a more offensive climate policy, but the domestic circumstances did not allow much change in actual applied foreign policy behaviour.[75]

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69   Shabecoff, Philip, "Joint Effort Urged to Guard Climate," *New York Times*, January 31, 1989, accessed September 7, 2012. http://www.nytimes.com/1989/01/31/science/joint-effort-urged-to-guard-climate.html.

70   Hoffmann, Matthew J., *Ozone Depletion and Climate Change: Constructing a Global Response* (Albany: State University of New York Press, 2005), 140–141; Park, Governing Climate Change Policy, 81.

71   Cass, *The Failures*, 35–36.

72   Shabecoff, Philip, "U.S. to Urge Joint Environmental Effort at Summit," *New York Times*, July 6, 1989, accessed September 7, 2012. http://www.nytimes.com/1989/07/06/world/us-to-urge-joint-environmental-effort-at-summit.html.

73   Brühl, Tanja, "Verweigerung statt Führung: Die internationale Umweltpolitik der USA," in *Weltmacht ohne Gegner: Amerikanische Außenpolitik zu Beginn des 21. Jahrhunderts*, ed. Peter Rudolf and Jürgen Wilzewski (Baden-Baden: Nomos, 2000), 370; Cass, *The Failures*, 75.

74   Bryner, "Congress and the Politics of Climate Change," 112.

75   Hoffmann, *Ozone Deplation and Climate Change*, 168.

A preliminary conclusion for the first time frame shows that international and national norms are incompatible, that national norms are more influential and thus guide climate foreign policy behaviour, leaving only little room for manoeuvre for the governments concerned.

3.2   *Negotiation and Non-ratification of Kyoto* (*1994–2005*)

As very few legislative acts were passed in the first period, the domestic norms of the constitutional and legal order of society did not change very much. With the National Environmental Policy Act and the Clean Air Act, a mere two central laws were passed between 1972 and 1994. Therefore, only a few changes appeared. There was, for example, some discussion as to whether GHG were classified as gases under the Clean Air Act or not, which President Clinton affirmed and which President George W. Bush, however, rejected.[76] Moreover, the close relationship between energy and climate was obvious looking at the National Energy Policy and the Energy Policy Act of 2005, which referred to climate change but argued that the security of supply was more important.[77] The Energy Policy Act supported in the first instance conventional energies.[78] Regulations regarding the energy efficiency of energy suppliers were part of the responsibility of the individual states, which is why different jurisdictions existed, whereby the degree of umbrella regulation itself increased over time with similar legislation in frameworks like the Regional Greenhouse Gas Initiative. The legislation of the states was, however, often much more far-reaching than the initiatives of the federal state.[79] Thus, new climate relevant norms for the constitutional and legal order indicator were not established. As a result of the scepticism of the Congress, the norms of the first time period stayed constant with only a few, very slight, new incremental accentuations.

The party program of the Democrats in 1996 favoured an international treaty for climate change mitigation.[80] As Gore was a presidential candidate in favour of environmental protection, environmental issues also played a significant role in many policy subfields in the party political program of 2000.[81]

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76   Martel, and Stelcen, "Clean Air Regulation," 138.

77   Dernbach, "U.S. Policy," 71–72.

78   Loc. cit.

79   Kosloff, Laura H., and Mark C. Trexler, "Consideration of Climate Change in Facility Permitting," in *Global Climate Change and U.S. Law*, ed. Michael B. Gerrard (Chicago: American Bar Association, 2007), 265–267.

80   Democratic Party, "Democratic Party Platform of 1996," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=29611.

81   Democratic Party, "Democratic Party Platform of 2000," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=29612.

Thus, even the suggestion of a ratification of the Kyoto Protocol can be found within the program. The program of 2004 linked in many ways to the Democrats' previous political program and argued for environmental politics in the interests of a preservation of God's creation, the promotion of health and efficiency, the support of future generations and the maintenance of the leading international role of the US. Moreover, the Democrats' political program of 2004 argued for the first time that climate change had been scientifically proven.[82]

The Republican Party Platform repeated the line in 1996 that climate politics must not destroy workplaces and that the Clinton administration was acting on the basis of scientific uncertainties. The loss of sovereignty due to an international treaty should be rejected at all costs. Climate politics should be guided by the principles of voluntary participation, respect to future generations, scientific certainty and only under conditions favourable to the economy.[83] The political program of 2000 called the Kyoto Protocol unscientific, ineffective and unfair. A Republican President would face climate change with new technologies, the maintenance of sovereignty and the promotion of competitiveness, this as they insisted that environmental protection was only possible where compatible with economic growth. The level of administration at which countries should deal with climate change was seen primarily as being that of the regional and local level.[84] In 2004, the party program of the Republicans also primarily wanted to deal with climate change problems through the application of new technologies and the principle of faith in market developments.[85]

To sum up, the indicator between the two parties is gradually becoming more polarised than was the case in the first time period. Independent of any specific party, an orientation towards the health of the population and economic efficiency is obvious. What is completely new is the reference to future generations. Different positions can be found as regards individual stances towards the reliability of scientific evidence.

A high rate of parliamentary activities can be found in the second time period. Republican majority in Congress after 1994 tried to soften environmental

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82   Democratic Party, "Democratic Party Platform of 2004," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=29613.

83   Republican Party, "Republican Party Platform of 1996," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=25848.

84   Republican Party, "Republican Party Platform of 2000," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=25849.

85   Republican Party, "Republican Party Platform of 2004," accessed September 5, 2012. www.presidency.ucsb.edu/ws/index.php?pid=25850.

legislation.[86] Moreover, the lobbying of the 'Greens' in Congress was reduced due to the fact that many of the Greens were now part of the Clinton administration.[87] The views of Congress during the Conference of the Parties (COP)1–(COP)3 are summed up by Frank Murkowski, the Chair of the Senate Energy and Natural Resources Committee, who said that the US was aware of the need for binding reduction targets, but the population, which was in competition with workplaces in China and India, insisted on those states being equally included in any possible treaty.[88] The conservative movement gained more influence and nominated many climate change denialists in the subsequent hearings, which tried to politicise scientific findings.[89] In Congress the number of those present at the hearings, who were closely related to the conservative movement and their industry changed from 10 percent in 1993 to 53.8 percent in 1997, while the number of people not denying climate change declined.[90] Thus, the discussion shifted from being about how to deal with climate change to being about whether climate change even existed.[91]

The influence of the conservative movement is also obvious in the adoption of the Byrd-Hagel resolution 1997 which the Global Climate Coalition supported.[92] The most important part of the resolution is as follows:

> (1) The United States should not be a signatory to any protocol to, or other agreement regarding, the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto in December 1997, or thereafter, which would (A) mandate new commitments to limit or reduce greenhouse gas emissions for the Annex I Parties, unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for Developing

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86   Bryner, "Congress and the Politics of Climate Change," 115.

87   Brühl, "Verweigerung statt Führung," 388.

88   Hoffmann, *Ozone Depletion and Climate Change*, 174.

89   McCright, Aaron M., and Riley E. Dunlap, "Defeating Kyoto: The Conservative Movement's Impact on U.S. Climate Change Policy," in *Social Problems* 50.3 (2003): 361–364.

90   Ibid., 362–363.

91   Ibid., 368.

92   Betsill, "The United States and Norms," 219; Bryner, "Congress and the Politics of Climate Change," 116; Harris, Paul G., "International Norms of Responsibility and U.S. Climate Change Policy," in *Climate Change and American Foreign Policy*, ed. Paul G. Harris (New York: Palgrave MacMillan, 2000), 231.

Country Parties within the same compliance period, or (B) would result in serious harm to the economy of the United States.[93]

Thus, the norm of a 'common but differentiated responsibility' was clearly supported.[94] As a result of the Senate's resistance, Clinton signed the Kyoto Protocol, but did not hand it over to the Senate for ratification, because following the Byrd-Hagel resolution,[95] the necessary majority of two thirds became unachievable. Therefore, the Byrd-Hagel resolution is a good indicator of national norms since it was passed without a single dissenting vote.[96] Many senators agreed with Hagel and his belief that the Senate would destroy the Kyoto Protocol.[97] At the end of the 1990s, many Republicans were also opposed to climate costs, for example in the case of representative McIntosh in regard to the Kyoto Protocol in 1998: "In promoting this agreement, President Clinton and Vice President Gore [are] putting their own political agenda ahead of the welfare and interests of the American people, our children, and future generations."[98] Generally, most senators and representatives of the Democrats did not put a lot of emphasis on supporting climate initiatives, since the price of doing so would be too high to be able to convince the necessary votes of the Republicans.[99] This behaviour remained the same at the beginning of the 2000s as the McCain-Lieberman Climate Stewardship Act dealing with emission reductions demonstrates: Republicans voted with 49 to 6 against and Democrats with 37 to 7 in favour.[100] Parliamentary activities in this period clearly demonstrate a clear opposition to climate initiatives with binding reduction targets. Norms of economic efficiency, national sovereignty and the inclusion of

93   Senate, "105th CONGRESS, 1st Session, S. RES. 98," accessed September 6, 2012. http://www.gpo.gov/fdsys/pkg/BILLS-105sres98ats/pdf/BILLS-105sres98ats.pdf, 4.

94   Harris, "International Norms," 231–235.

95   Brühl, "Verweigerung statt Führung," 376; Bryner, "Congress and the Politics of Climate Change," 119; Cass, *The Failures*, 132; Hoffmann, *Ozone Deplation and Climate Change*, 180; Missbach, Andreas, "Regulation Theory and Climate Change Policy," in *Climate Change and American Foreign Policy*, ed. Paul G. Harris (New York: Palgrave MacMillan, 2000), 145.

96   Brühl, "Verweigerung statt Führung," 373, 387; Bryner, "Congress and the Politics of Climate Change," 118–119, 124–125.

97   Missbach, "Regulation Theory and Climate Change Policy," 145.

98   McIntosh, David, "Kyoto-Protocol: Is the Clinton-Gore Administration Selling Out Americans?" quoted from Park, "Governing Climate Change Policy," 86.

99   Bryner, "Congress and the Politics of Climate Change," 127.

100   Grist, "A Breakdown of the Senate Vote on the Climate Stewardship Act," accessed September 6, 2012. www.grist.org/article/griscom-climatevote; Selin, Henrik, and Stacy D. VanDeever, "Political Science and Prediction: What's Next for U.S. Climate Change Policy," in *Review of Policy Research* 24.1 (2007): 4.

developing countries with common but differentiated responsibility dominated, while scientific results were put under substantial pressure by climate change denialists.

In the second time period, survey data is available showing differing results in a variety of surveys. In 1997, a survey with multiple enumerations showed that 24 percent saw global warming as a significant environmental problem, whereby climate change was at the end of a list of eight environmental problems. Also in 1997, 70 percent of respondents demanded to include developing countries in international treaties to reduce GHG, whereby 19 percent supported a leading role for industrial countries.[101] And in the same year, 53 percent supported an implementation even without developing countries and 44 percent an implementation only if developing countries were included.[102] By 1998, active climate policies were supported by 41 percent of the population regardless of their cost and in 2004 by 31 percent. Again in 1998, 15 percent said that no high cost investments in climate change actions should be undertaken so long as the scientific evidence wasn't clear; 23 percent held this opinion in 2004.[103] In 1997 and in 2004, 67 percent believed that the economy would be more efficient in the long term due to the reduction of GHG, and in the same surveys 20 percent said in 1997 that a reduction of GHG would be too expensive and 29 percent in 2004.[104] These differing results do not allow a clear evaluation. In all probability: what they do support is the idea of a more polarised domestic approach to the now highly politicised climate politics—something which is also highly visible in the party political programs of this period.

Domestic socialisation gained more influence in our second time period. The conservative movement became stronger, as did influential environmental lobby groups, and the transformation of the industrial advocacy coalition as well as regional climate initiatives ensured that these groups also started to play big roles in the development of policy. One important actor was a conservative advocacy coalition, which was an "elite-driven network of private foundations, policy-planning think tanks, and individual intellectuals and activists that directly or indirectly attempt[ed] to advance social traditionalism and

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101   The Pew Research Center for the People and the Press, "Americans Support Action On Global Warming."

102   Program on International Policy Attitudes (PIPA)/Knowledge Network, "Americans on the Global Warming Treaty," accessed September 6, 2012. www.pipa.org/OnlineReports/ClimateChange/GlobalWarming_Nov00/GlobalWarming_Nov00_rpt.pdf, 16.

103   Program on International Policy Attitudes (PIPA)/Knowledge Network, "Americans on Climate Change," accessed September 6, 2012. www.pipa.org/OnlineReports/ClimateChange/ClimateChange04_Jun04/ClimateChange_June04_rpt.pdf, 3.

104   Ibid., 4.

economic libertarianism on a national level".[105] This movement saw its life-style being threatened by changes in climate politics, which they perceived as impacting upon economic growth, free markets and national sovereignty.[106] The movement used a wide range of methods to exert their influence, including journalism, TV shows, hearings, ad-hoc-projects etc., then, following the achievement of a Republican majority in Congress, they also gained access to institutional forms of influence.[107] They referred to the same five climate change denialists as the Global Climate Initiative.[108] Thus, it was hard for the administration to mediate active climate politics.[109] Environmental NGOs like the Climate Action Network (CAN) condemned the work of the Global Climate Coalition, but lacked privileged access to political organs, were too inactive and could not mobilise a critical mass.[110] From the mid to the late 1990s, powerful grassroots lobbying campaigns, companies with an interest in energy efficiency and renewable energies etc. were simply missing from the scene.[111] However, at the beginning of the 2000s, more and more companies began to desert the Global Climate Coalition and to see possibilities in consistent legislation with climate goals as a future market.[112] Geo Greens from the energy and security sector also supported an active climate policy since they were highly critical of the dependency on foreign oil.[113] This green wave supported the foundation of the Pew Center of Global Climate Change, a conglomerate of companies supporting a more active climate policy and the ratification of the Kyoto Protocol.[114] More and more national and regional newspapers also started to favour a more active climate policy.[115] Moreover, after George W. Bush became President, local and regional initiatives increased.[116] The main

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105   McCright, and Dunlap, "Defeating Kyoto," 352, footnote 6.
106   Bryner, "Congress and the Politics of Climate Change," 115; McCright, and Dunlap, "Defeating Kyoto," 353.
107   Ibid., 356–358, 360.
108   Ibid., 358–359.
109   Betsill, "The United States and Norms," 220.
110   Missbach, "Regulation Theory and Climate Change Policy," 146; Selin, and VanDeveer, "Political Science and Prediction," 7.
111   Bryner, "Congress and the Politics of Climate Change," 130.
112   Ibid., 121–122; McCright, and Dunlap, "Defeating Kyoto," 369; Selin, and VanDeveer, "Political Science and Prediction," 11.
113   Selin, and VanDeveer, "Political Science and Prediction," 11.
114   Brühl, "Verweigerung statt Führung," 388; Cass, *The Failures*, 170.
115   Selin, and VanDeveer, "Political Science and Prediction," 8.
116   Peterson, Thomas D., and Adam Z. Rose, "Reducing Conflicts between Climate Policy and Energy Policy in the US: The Important Role of the States," in *Energy Policy* 34.5 (2006): 619–631; Selin, and VanDeveer, "Political Science and Prediction," 4–7.

arguments used for a proactive climate policy were the compatibility of climate protection with economic efficiency, the economic advantages of renewable energies, and an open policy process with intra- and inter-regional and intergenerational equality and cooperation.[117] Moreover, in the 2000s, environmental groups put more and more pressure on the government, through, for example, information campaigns.[118] To sum up, the extant norms were diversified by the socialisation processes, probably into two ideologies: one being found in the society/companies/advocacy coalition during the 1990s and during the presidency of George W. Bush in the 2000s and the other, more climate friendly, ideology being found in the administration of the 1990s and in the society/companies/advocacy coalition during the 2000s.

The international indicator of general international law can be found in the COPs between 1994 and 2005. Before COP 1, it was clear that the reduction targets which had been reached up until this point were insufficient.[119] One group of states was in favour of higher reduction targets (EU and others) while some were sceptical about the proposed new targets (Australia, Canada, Iceland, Japan, Liechtenstein, New Zealand, Norway, Switzerland, United States as JUSSCANNZ).[120] The Berlin Mandate indicated the inadequacy of the contemporary reduction targets by referring to the UNFCCC principles.[121] COP 2 in Geneva worked out the Geneva Declaration, which accepted the IPCC report as a guide for further negotiations.[122] The arrangement of a protocol concretising the UNFCCC seemed to be very complicated, since the JUSSCANNZ group together with Russia, China, the Organisation of the Petroleum Exporting Countries (OPEC) and some developing countries opposed the European proposal to accept clear reduction targets.[123] COP 3 accepted the Kyoto Protocol with the goals stated in art. 1 of higher energy efficiency, the strengthening of sinks, the adaptation of sustainable development, the promotion of new technologies, the reduction of subventions in GHG intensive sectors, reforms to

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117   Peterson, and Rose, "Reducing Conflicts," 623–628.

118   Moser, "In the Long Shadows of Inaction," 133.

119   Beyerlin, *Umweltvölkerrecht*, 176–177.

120   Cass, *The Failures*, 116.

121   United Nations Framework Convention on Climate Change (UNFCCC), "Report of the Conference of the Parties on its First Session, Held at Berlin from 28 March to 7 April 1995. Addendum. Part Two: Action Taken by the Conference of the Parties at its First Session," accessed September 6, 2012. http://www.unfccc.int/resource/docs/cop1/07a01.pdf, 5.

122   Verheyen, "Der Beitrag des Völkerrechts," 56.

123   Brühl, Tanja, "Umweltpolitik," in *Handbuch zur deutschen Außenpolitik*, ed. Siegmar Schmidt, Gunther Hellmann and Reinhard Wolf (Wiesbaden: vs Verlag für Sozialwissenschaften, 2007), 707.

reduce GHG and a better waste management program.[124] Moreover, Annex I includes a reduction of 5 percent in the time frame 2008–2012, while Annex II includes concrete reduction targets for each country. To reach these targets, high levels of flexibility were developed through the use of three different economic mechanisms: joint implementation, clean development mechanism and emissions trading.[125] These economic mechanisms are very much compatible with the norms of economic efficiency within the US.[126] The protocol would, for example, only come into operation when 55 states with 55 percent of the worldwide GHG emissions had signed it. The following COPs did not achieve any significant new developments. At COP 6, conflicts occurred in relation to the arrangement of the protocol.[127] President Bush then withdrew the US from the Kyoto Protocol after COP 6. However, the Marrakesh Accords were worked out at COP 7 as an arrangement of the Kyoto Protocol[128] and with the ratification of Russia on 16th February 2005 the Kyoto Protocol came into operation. Two conclusions can be drawn from these COPs: Firstly, the norms of the UNFCCC were ultimately confirmed, especially in the case of the Kyoto Protocol. Secondly, new norms regarding flexibility, profitability and the belief in technological solutions became more important.

The legal acts of international organisations can be seen as a diffusion of these different organisations, for example in the case of the Marrakesh Agreement of the World Trade Organisation (WTO),[129] however, it cannot be claimed that a clear connection between climate change and liberalisation existed at this point.[130] A UN conference from 23rd to 27th June 1997 reviewed the progress, which had been made after UNCED 1992 and had come to some fairly disappointing conclusions. The General Assembly Special Session therefore renewed the goals of the UNCED 1992.[131] Thus, the norms of sustainability

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124 United Nations Framework Convention on Climate Change (UNFCCC), "Kyoto Protocol to the United Nations Framework Convention on Climate Change," accessed September 6, 2012. http://www.unfccc.int/resource/docs/convkp/kpeng.pdf.

125 Beyerlin, *Umweltvölkerrecht*, 179, 336.

126 Brühl, "Umweltpolitik," 707–708.

127 Cass, *The Failures*, 208.

128 Danish, Kyle W., "The International Regime," in *Global Climate Change and U.S. Law*, ed. Michael B. Gerrard (Chicago: American Bar Association, 2007), 31–60.

129 World Trade Organisation (WTO), "Marrakesh Agreement Establishing the World Trade Organization," accessed September 6, 2012. http://www.wto.org/english/docs_e/legal_e/04-wto_e.htm.

130 Miller, Alan S., "International Trade and Development," in *Global Climate Change and U.S. Law*, ed. Michael B. Gerrard (Chicago: American Bar Association, 2007), 280–285.

131 Beyerlin, *Umweltvölkerrecht*, 23–25.

were strengthened. Moreover, climate politics, as a cross section policy, also had an indirect influence on the "Millennium Development Goals".[132] The World Bank in particular supported many projects more or less directly connected with climate issues in terms of their development policy.[133] In this time period it is therefore obvious that the creation of norms regarding climate change is only possible within the UN, respectively the UNFCCC at the international level. Other organisations are only affected insofar as climate norms diffuse into them. These diffusions can also be seen as a strengthening of the norms due to the higher communality results. However, in 2005 the US founded the 'Asia-Pacific Partnership on Clean Development and Climate' whose members are South Korea, India, China, Canada, Australia and New Zealand. This partnership is focused on technological progress in energy intensive industries instead of on concrete emission reduction targets.[134] Thus, the domestic norms of believing in technology and being flexible in relation to reductions found a new international forum, which, due to its limited number of members, did not gain much influence.

Having a look at the final acts of international conferences in this time period, it seems obvious that the diffusion of climate relevant norms has increased. In terms of having a close relation to climate politics, one can take, for example, the Group of Eight (G8) meeting of 2005, which for the first time included the G8 Climate Change Round Table. The communiqué adopted related climate politics with questions of energy and development (G8 2005). The World Bank and other international organisations were forced to draft development plans related to renewable energies as their main development motor, whereby the principle of sustainable development became guiding in regard to limiting global warming to a 2°C rise in comparison to its pre-industrial levels.

Transnational socialisation was focused on the direct environment of the COPs since a high number of NGOs used the possibility to participate actively.[135] At first, these NGOs were mostly of environmental backgrounds; later, however, some of industrial origin started to become active, focusing first of all, during the 1990s, on scientific uncertainties, but gradually starting to see

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132 Miller, "International Trade and Development," 285–287; United Nations Development Programme (UNDP), "Glossary of Climate Change Acronyms," accessed September 6, 2012. http://www.unfccc.int/essential_background/glossary/items/3666.php.

133 Miller, "International Trade and Development," 289–293.

134 Asia-Pacific Partnership (APP), "The Asia-Pacific Partnership on Clean Development and Climate," accessed September 6, 2012. www.asiapacificpartnership.org/pdf/translated_versions/Fact_Sheet_English.pdf; Danish, "The International Regime," 55.

135 Brühl, "Nichtregierungsorganisationen," 111.

advantages in the reduction of GHG emission throughout the 2000s—something which can be observed in the foundation of associations, such as the Climate Group.[136] At the end of our second time period there is also some cooperation between environmental and industrial advocacy coalitions. To sum up, transnational socialisation tried to influence the US in the context of international negotiations and to bring them to accept more climate friendly norms, yet ultimately it was seen to have only a minimal influence upon proceedings.

The *foreign climate policy of the US administrations* in our second time period has to be divided into the presidencies of Clinton and of George W. Bush. At COP 2 the leader of the US delegation clearly stated that he would not support unattainable goals.[137] However, after the release of the IPCC report in 1995, climate change began to gain more influence on foreign policy. This setting of priorities can also be found at the COP 2 in 1996 where the US agreed on binding reduction targets.[138] As a result of the Republican majority in the Senate, the Secretary of the Interior, Babbitt, said in 1997 that opinion-forming in the administration was very complicated, since, while from an international perspective the US reduction targets were not ambitious enough, at the same time the Senate regarded them as being far too ambitious. Nevertheless, Clinton supported a more proactive climate policy before the Kyoto negotiations.[139] Thus, the administration developed a position more in keeping with international than domestic sentiments.[140] However, the Byrd-Hagel resolution made it clear to the administration that an offensive climate policy would not be accepted at a national level. At the White House Climate Conference in October 1997, President Clinton named three guiding principles for US climate politics: the acceptance of scientific knowledge and binding reduction targets and an acknowledgement of the global responsibility of the US, which, however, would be tempered by flexible mechanisms and the inclusion of developing countries, this latter moderation because of the results of the Byrd-Hagel resolution.[141] From the perspective of the US, the negotiations in Kyoto

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136   Brühl, "Nichtregierungsorganisationen," 113; Selin, and VanDeveer, "Political Science and Prediction," 8–9.

137   Cass, *The Failures*, 120–121.

138   Verheyen, "Der Beitrag des Völkerrechts," 56.

139   Cass, *The Failures*, 130; Betsill, "The United States and Norms," 220; Park, "Governing Climate Change Policy," 83.

140   Cass, *The Failures*, 125.

141   Bryner, "Congress and the Politics of Climate Change," 116; Harris, Paul G., "Climate Change: Is the United States Sharing the Burden?" in *Climate Change and American Foreign Policy*, ed. Paul G. Harris (New York: Palgrave MacMillan, 2000), 41.

were successful. Two of their three central objectives were attained, namely the acquisition of the 5.2 percent reduction target for the US and the inclusion of the use of flexible mechanisms.[142] The chairwomen of the White House Council on Environmental Quality therefore judged the negotiations to have been a success: "The truth of our ideas won the day in Kyoto."[143] Only the attempt to more actively include developing countries was not entirely successful. For the Secretary of State, the reason that the US argued so much in favour of greater participation from developing countries was grounded in the campaigns of the Global Climate Coalition.[144] The negotiations of COP 1 to COP 3 show that the US administration tried to reach a binding and holistic climate treaty, but that the domestic sphere very much held them back from taking further action.[145] Therefore, the US administrations tried to argue that the costs of the Kyoto Protocol would be very low and allow for economic growth.[146] After George W. Bush became President in 2000, he declared the US's withdrawal from the Kyoto Protocol in 2001.[147] The most prominently disputed points in the previous negotiations were questions regarding joint implementation, the universal participation of developing countries and scientific uncertainties.[148] In his speech "Clear Skies and Global Climate Change Initiatives" in 2002, Bush named the principles of his administration regarding climate change.[149] Bush said that economic growth was his main goal in protecting the

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142   Betsill, "The United States and Norms," 218, 221; Brühl, "Verweigerung statt Führung," 374; Hoffmann, *Ozone Depletion and Climate Change*, 178; Missbach, "Regulation Theory and Climate Change Policy," 140–141.

143   Missbach, "Regulation Theory and Climate Change Policy," 140.

144   Ibid., 146.

145   Hoffmann, *Ozone Deplation and Climate Change*, 170–179.

146   Cass, *The Failures*, 166.

147   Brühl, "Umweltpolitik," 708.

148   Chalecki, Eizabeth L., "Exceptionalism as Foreign Policy: US Climate Change Policy and an Emerging Norm of Compliance," in *Climate Change and Foreign Policy: Case Studies from East to West*, ed. Paul G. Harris (London, New York: Routledge), 152–156; Dickinson, Tim, "Secret Campaign of President Bush's Administration to Deny Global Warming," *Rolling Stone*, June 28, 2007, accessed September 6, 2012. www.afterdowningstreet.org/node/23938; Hoffmann, *Ozone Depletion and Climate Change*, 183; Schniering, Peter, *U.S. Climate Policy and Technology: The Bush Administration and American Conceptions of Environmental Challenges* (Baden-Baden: Nomos, 2008), 51.

149   Bush, George W., "Speech by President Georg W. Bush Introducing Clear Skies and Global Climate Change Initiatives on February 14, 2002," in *Climate Change: Debating America's Policy Options*, ed. David G. Victor, accessed September 6, 2012. www.cfr.org/content/publications/attachments/climate_change.pdf.

environment.[150] Moreover, Bush did not see climate change as an irresolvable issue, as he had faith that "Americans are among the most creative people in our history".[151] Therefore, the US administration had deep trust in technological progress,[152] as Bush mentioned in another speech:

> America is on the verge of technological breakthroughs that will enable us to live our lives less dependent on oil. And these technologies will help us be better stewards of the environment and they will help us to confront the serious challenge of global climate change.[153]

Moreover, developing and emerging countries, such as India and China, also had to reduce their GHG emissions.[154] This relatively inactive role in foreign climate policy was justified by the "American Way of Life", which, as Ari Fleischer, the White House Press Secretary, stated in 2001, was considered sacrosanct: "The President believes [...] that it should be the goal of policymakers to protect the American way of life. The American way of life is a blessed one."[155] Also in the context of the publication of the National Academy of Science Report in 2001, President Bush focused on scientific uncertainties, high economic costs and the argument that climate protection would be best achieved through technical progress.[156] Thus, the US administration argued in favour of norms that were not compatible with norms outside, or even inside, of the country.[157] To conclude, it seems obvious that foreign climate policy under President Clinton was at the very fringes of what national perceptions of normative behaviour allowed. Under President George W. Bush, US foreign policy then went from being more or less inactive to a position from which the country blockaded climate politics, enforcing inactivity, not just domestically, but also internationally

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150   Bush, "Speech by President George W. Bush," 151.

151   Ibid., 157.

152   Donner, Susanne, and Felix Faltin, *Klimapolitische Entwicklungen in den USA: Initiativen auf bundesstaatlicher und regionaler Ebene* (Berlin: Deutscher Bundestag), 5; Schniering, *U.S. Climate Policy and Technology*.

153   Bush, George W., "Statement," in *Media Covering Up UN Global Warming Report's Political Agenda, Senator Inhofe Charges*, ed. Morano, Marc, accessed September 6, 2012. epw.senate.gov/public/index.cfm?FuseAction=Minority.Blogs&ContentRecord_id=79C41A1E-802A-23AD-40C1-210D91AC6AFE.

154   Bush, "Speech by President George W. Bush," 155.

155   Dickinson, "Secret Campaign."

156   Dernbach, "U.S. Policy," 74–75.

157   Chalecki, "Exceptionalism as Foreign Policy," 152.
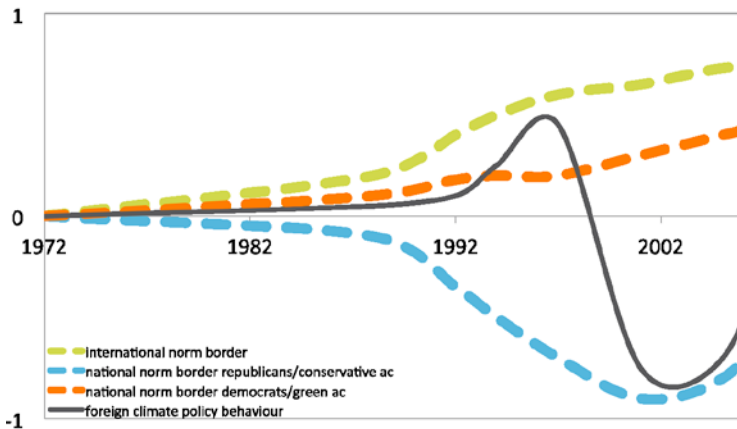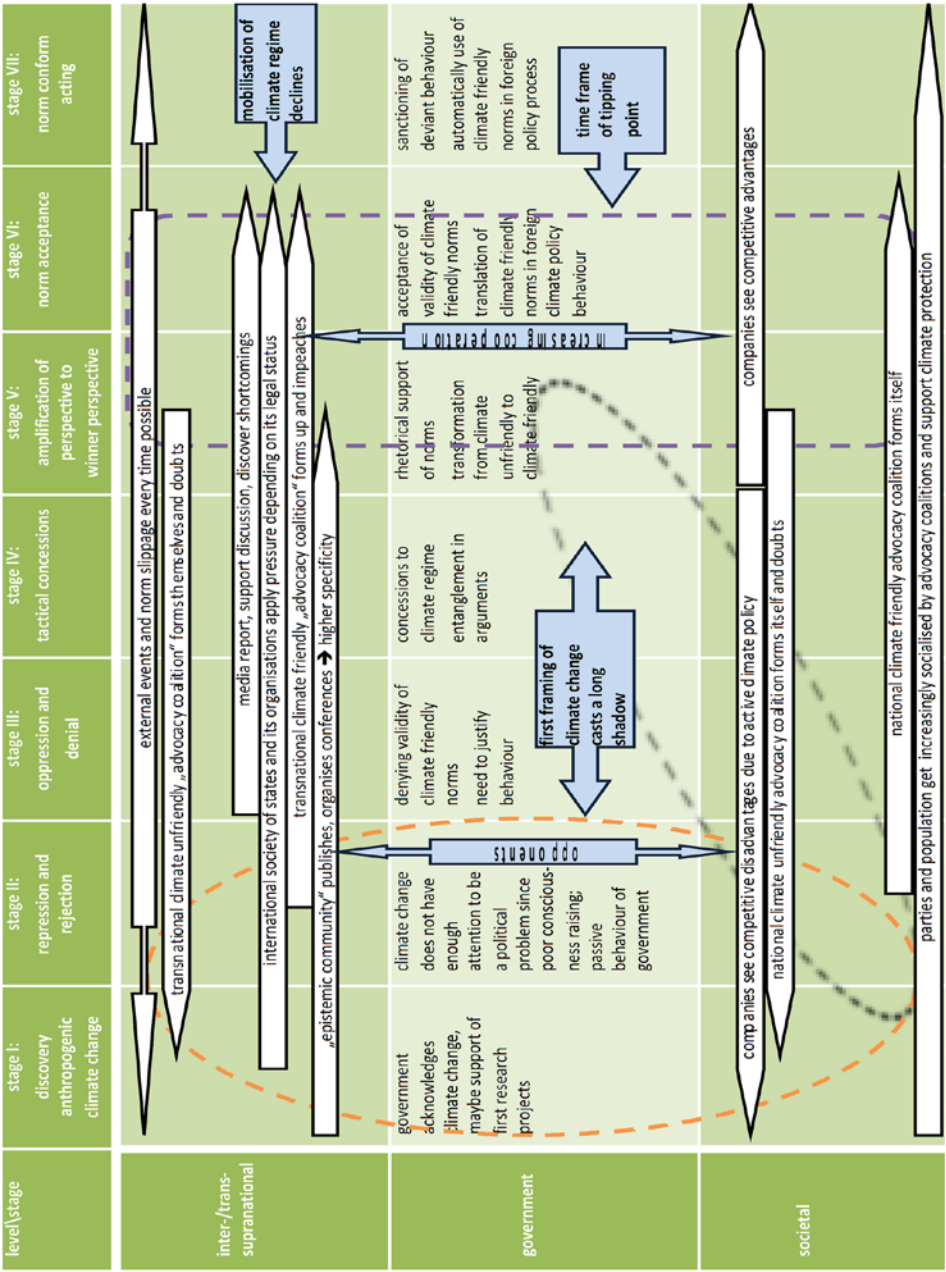
FIGURE 3.1   *Norms as borders*

4   Results

4.1   *Norms as Borders*

The empirical results show a dominance of domestic norms and socialisation processes, a divided society after the 1990s and the importance of holding a majority in Congress. As a theoretical result, one can therefore conclude that norms as borders build room for manoeuvre, whereby socialisation processes are able to push slightly in one or the other direction. Figure 3.1 tries to summarise the findings of this chapter. It is no quantification, but rather a heuristic approximation.

Figure 3.1 indicates an active foreign climate policy as a forerunner; 0 means a passive foreign climate policy, while –1 indicates active opposition. The graph illustrates how the international norm border (green), the domestic norm border of those societal groups with a tendency to vote Democrat (orange), the societal norm of Republicans (blue) and the foreign climate policy behaviour (grey) developed in the US's case. The domestic sphere had to be separated, because it was—as mentioned earlier—too clearly divided into two separate strands. We can see that the international norm border developed its main norms during the 1990s, followed by a subsequent stabilisation due to the diffusion of UNFCCC norms in other international organisations. The Democrats always tended towards active climate-friendly behaviour, but first developed their norms in that direction very much after George W. Bush became President. During the 1990s, the dominant view of most Republicans, however, became more and more actively opposed to climate policy. If we look at an example we can see: With the signing of the Kyoto treaty, President Clinton

FIGURE 3.2   *Norm-Stage-Model*

Levels: level\stage; inter-/transupranational; government; societal

Stages:
- stage I: discovery anthropogenic climate change
- stage II: repression and rejection
- stage III: oppression and denial
- stage IV: tactical concessions
- stage V: amplification of perspective to winner perspective
- stage VI: norm acceptance
- stage VII: norm conform acting

Contents:

stage I: government acknowledges climate change, maybe support of first research projects

stage II: climate change does not have enough attention to be a political problem since poor consciousness raising; passive behaviour of government — opponents

stage III: denying validity of climate friendly norms need to justify behaviour — first framing of climate change casts a long shadow

stage IV: concessions to climate regime entanglement in arguments — "advocacy coalition" forms → higher specificity

stage V: rhetorical support of norms transformation from climate unfriendly to climate friendly — increasing cooperation

stage VI: acceptance of validity of climate friendly norms translation of climate friendly norms in foreign climate policy behaviour

stage VII: sanctioning of deviant behaviour automatically use of climate friendly norms in foreign policy process — time frame of tipping point

mobilisation of climate regime declines

external events and norm slippage every time possible

transnational climate unfriendly "advocacy coalition" forms themselves and doubts

media report, support discussion, discover shortcomings

international society of states and its organisations apply pressure depending on its legal status

transnational climate friendly "advocacy coalition" forms up and impeaches

"epistemic community" publishes, organises conferences → higher specificity

companies see competitive advantages

companies see competitive disadvantages due to active climate policy

national climate unfriendly advocacy coalition forms itself and doubts

national climate friendly advocacy coalition forms itself

parties and population get increasingly socialised by advocacy coalitions and support climate protection

was—in relation to domestic norms—too much in favour of an active foreign climate policy and subsequently got sanctioned by the Byrd-Hagel resolution.

4.2   *Norm-Stage-Model*

It seems obvious that

> [n]orms do not come out of the ground like dragon's teeth nor do they spring out of the water. They emerge through the complex interaction of stakeholders arguing new percepts or designing and implementing new strategies within normative policy debates.[158]

As a generalisation of its findings, this chapter suggests the development of a Climate-Norm-Stage-Model to identify actors, phases, levels and mechanisms during the emergence and development of norms.

On the vertical axis, one can find the different levels (international, governmental, domestic/societal) and on the horizontal the different stages (discovery of anthropogenic climate change, repression and rejection, oppression and denial, tactical concession, the amplification of a government tolerance of climate change policy up until the point at which it becomes something which they begin to accept and subsequently actively pursue, norm acceptance and norm conformity). At an international level, one can find an advocacy coalition in favour of the status quo, pushing norm development towards the left, and a climate regime, pushing towards the right. At the domestic level, one can find similar groups, pushing in one or the other direction. Moreover, one can see a framework that indicates that the first framing of climate change casts a long shadow. This is a framework, which also ultimately provides the build-up to a tipping point, whereafter the social norm comes out strongly in favour of pro-climate action policies. One can also see that external, unforeseen events can always make a norm slippage possible. The argument is now the same as it was in the previous graph, but in a more generalised way: A government can only follow a foreign climate policy which wavers between the, at the time, existent international normative stage and the dominant domestic societal normative stage. If there is a difference of more than two stages between the foreign policy behaviour and a norm border, the government in question will end up getting sanctioned.

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158   Nagtzaam, *The Making of International Environmental Treaties*, 17.

PART 2

Past

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North American Climate History

Samuel White, Kenneth M. Sylvester and Richard Tucker

Abstract

North American climate history represents a new but rapidly growing field of interdisciplinary research. Relative to Europe and Asia, documentary data for historical climate reconstruction in the present US and Canada remain scarce. However, research into physical climate proxies such as tree rings, the archaeology of Native American (or First Nation) societies, written sources, and early instrumental measurements has begun to extend knowledge of the continent's past weather and climate and their historical impacts. This chapter presents a brief overview of the historiography and sources for the field, followed by a longer chronological summary of the role of climate and weather in North American history since the first human arrivals.

1   In Search of a North American Climate History

This chapter aims to provide a current overview of studies and topics on climate and weather in North American history, broadly construed. As the first review of its kind, and in the limited space here, we cannot hope for comprehensive coverage; but we do hope it will guide and encourage researchers taking a new and often overlooked approach to the North American past. Unlike Europe or China, North America does not yet have an established field of climate history or historical climatology.[1] Yet one is almost certain to appear in the near future, as information accumulates, techniques improve and global warming raises interest in past changes. Although the historiography has conventionally neglected or downplayed climate, historians of the United States and Canada do not lack for data, and climate has begun to crop up as an issue in various areas of history writing, especially environmental history. This chapter will first examine the historiography and sources and then take a

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[1]   In this chapter, "historical climatology" will be used in the common international sense, to mean the reconstruction of past climates and climate impacts. In America, by contrast, "historical climatology" sometimes refers to the systematic compilation of instrumental data.

chronological look at climate in the continent's history from Paleoindians to the twentieth century.

In past decades the emergence of climate history in North America has faced certain historiographical and practical obstacles. American historians across the political spectrum have preferred to concentrate on human agency over natural constraints. Early environmental historians emphasised Native American harmony with nature and European destruction of "wilderness".[2] This is true also of the early development of the field in Canada.[3] The historiography has tended to take a static and generally positive view of pristine nature, which has left little room for the study of climate changes and impacts.

In common with other settler nations such as Australia, early documentary records of weather in North America are often short, discontinuous, and written by observers unfamiliar with the local climate.[4] The great geographical diversity of the continent forces historical climatologists to deal with extremely diverse weather systems; and North Americans have often focused more on fixed regional differences than on climate fluctuations.[5] Environments changed rapidly under the impact of forest clearance and agriculture, often leading observers to attribute natural climate shifts to human agency.[6]

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2   Carolyn Merchant sees the shift in the scientific revolution where the paradigm of Dominion over nature displaced earlier ideas of nature as nurturing 'mother earth', see her synthesis: Merchant, Carolyn, *Reinventing Eden: The Fate of Nature In Western Culture* (New York: Routledge, 2003). William Cronon shared some of the European destruction of the wilderness in his early work on colonial settlement, but began to shift away from the pristine myth as insight into native transformation of the environment grew in the literature. See Cronon; William, "The Trouble with Wilderness; or, Getting Back to the Wrong Nature," in *Uncommon Ground: Rethinking the Human Place in Nature*, ed. William Cronon (New York: W.W. Norton & Co., 1995): 69–90.

3   See the special issue of *Environmental History* 12.4 (2007) for a cross-section of recent work on Canadian topics.

4   For recent work on Australian colonisation and climate history, see Beattie, James, Emily O'Gorman, and Matthew Henry, ed., *Climate, Science, and Colonization* (London: Palgrave, 2014).

5   For example, Chaplin, Joyce E., "Climate and Southern Pessimism: The Natural History of an Idea, 1500–1800," in *The South as an American Problem*, ed. Larry J. Griffin and Don H. Doyle (Athens: University of Georgia Press, 1995), 57–82; Koeniger, A. Cash, "Climate and Southern Distinctiveness," *The Journal of Southern History* 54 (1988): 21–44; Stewart, Mart A., "'Let Us Begin with the Weather?': Climate, Race, and Cultural Distinctiveness in the American South," in *Nature and Society in Historical Context*, ed. Mikulas Teich, Roy Porter and Bo Gustafsson (New York: Cambridge University Press, 1997), 240–256.

6   See e.g., Thompson, Kenneth, "Forests and Climate Change in America: Some Early Views," *Climatic Change* 3 (1980): 47–64; Vogel, Brant, "The Letter from Dublin: Climate

The environmental history of diversity and change has presented conceptual problems for climate history as well. Rapid demographic and technological change has meant that North American society has continuously overcome old obstacles from weather and climate and then raised new challenges. Historians have focused on this social change rather than on climate or weather events themselves. As William Meyer has put it with respect to the United States, "the history of American weather to date is not principally the story of how the weather has changed, but of how Americans have changed."[7] Even in cases of evident climate-related disaster, such as the Dust Bowl of the 1930s, Americanists have preferred other narratives that place individuals or institutions front and center.[8]

As it develops, climate history in North America will likely turn out different than that in Europe and China, where the field has been strongest. European and Chinese farmers often dealt with similar agrarian conditions over generations or centuries, providing a background against which to measure climate impacts. It is hard to find this *longue durée* in the history North America, which has never had a large poor but stable agrarian population depending from season to season on favourable weather. Historians could search in vain for well-defined patterns in weather, prices, nutrition, and disease as found in preindustrial Europe;[9] and they are even less likely to locate major climate-led catastrophes and rebellions, as recently identified in medieval and early modern Asian history.[10] As this article makes clear, climate history in America will require different approaches and perhaps a greater emphasis on the cultural aspects of climate, especially in modern times, given Americans' historic wealth and mobility.

Nevertheless, climate has been a real force in North American history and one that deserves study in its own right. This is especially true if we take a broader look that incorporates proxy data and archaeology. Global warming may bring climate changes and impacts not seen for millennia, which may add

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Change, Colonialism, and the Royal Society in the Seventeenth Century," *Osiris* 26 (2011): 111–128.

7   Meyer, William, *Americans and Their Weather* (New York: Oxford University Press, 2000), 6.

8   Cronon, William, "A Place for Stories: Nature, History, and Narrative," *The Journal of American History* 78 (1992): 1347–1376.

9   For example, Post, John D., *Food Shortage, Climatic Variability, and Epidemic Disease in Preindustrial Europe* (Ithaca, NY: Cornell University Press, 1985).

10   For example, Brook, Timothy, *The Troubled Empire: China in the Yuan and Ming Dynasties* (Cambridge: Harvard Belknap, 2010) and White, Sam, *The Climate of Rebellion in the Early Modern Ottoman Empire* (New York: Cambridge University Press, 2011).

relevance to studies of the Pleistocene and early Holocene past. As this review explains, historical climatology has recently opened new perspectives on the country's Native American past, and helps bridge their history and the story of European settlement. Even in the industrial era, climate and weather events have had significant historical consequences. Of course, historians should always use climatic explanations carefully and contextually. However at present there seems much less danger of an American 'climate determinism' than of simple climate neglect.[11] The following sections will outline available sources, recent studies, and some possible directions for research.

2   Sources for North American Climate History

The sources for American climate history reveal some substantial weaknesses, but also strengths, when compared to the best studied countries in Europe and Asia. Since other recent reviews have already explained both the state of the art for European historical climatology in particular[12] and historical-scale climate reconstruction in general,[13] this section will focus on specific issues for Americanists, with references and further reading in the footnotes.

2.1   *The Proxy Record*
North American climate reconstruction draws on much the same physical records studied elsewhere, including pollen profiles, lake varves, sediment cores, ice cores, speleothems, and tree rings.[14] Some recent studies have also branched

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11   Steinberg, Ted, *Down to Earth: Nature's Role in American History*, 3rd ed. (New York: Oxford University Press, 2013) is exceptional in its observation of climate in American environmental history. For a global perspective, see Richards, John F., *The Unending Frontier: Environmental History of the Early Modern World* (Berkeley: University of California Press, 2003) and McNeill, J.R., *Something New Under the Sun* (New York: Norton, 2000).

12   For example, Brázdil, Rudolf et al., "Historical Climatology in Europe—The State of the Art," *Climatic Change* 70 (2005): 363–430, and Brázdil, Rudolf et al., "European Climate of the Past 500 Years: New Challenges for Historical Climatology," *Climatic Change* 101 (2010): 7–40.

13   For example, Jones, P.D., "High-Resolution Palaeoclimatology of the Last Millennium: A Review of Current Status and Future Prospects," *The Holocene* 19 (2009): 3–49; Jones P.D., "Historical Climatology—A State of the Art Review," *Weather* 63 (2008): 181–186; and Mock, Cary J., "Early Instrumental and Documentary Evidence of Environmental Change," in *The SAGE Handbook of Environmental Change*, vol. 1, ed. John A. Matthews et al. (Los Angeles: SAGE, 2012), 345–360.

14   The last systematic overview of American historical climate proxy studies appears in several articles in Bradley, Raymond S., and Philip D. Jones, ed., *Climate since A.D. 1500*, Rev.

out into more novel forms of climate reconstruction, such as the analysis of ancient clam shells.[15] While the density of data is often lower than in Western Europe, it is stronger than in most other parts of the world, and data sharing arrangements (not to mention a common language and only two national governments) often make it more systematically accessible.[16] The particular strength of American proxy climate reconstruction, and generally the most useful sort for climate historians, has been tree rings. Southwestern research universities pioneered tree-ring studies; and the region affords extremely long-lived species at varying altitudes, allowing precipitation and sometimes temperature reconstructions for two millennia or more at annual or seasonal resolution.[17] Tree-ring studies in the northwest, midwest, and southeast United-ed States, while not as ample, have also reconstructed several centuries of precipitation at local or regional scales.[18] Studies of tree rings at high latitudes and altitudes have made possible the reconstruction of temperatures in parts of Canada and the mountain states, although without such a high degree of correlation and precision.[19] Taken together, this data has allowed for

ed. (London: Routledge, 1995). The following footnotes will focus on more recent work.

15   For example, Alan D. Wanamaker et al., "Coupled North Atlantic Slope Water Forcing on Gulf of Maine Temperatures over the Past Millennium," *Climate Dynamics* 31 (2008): 183–194.

16   For raw data and study and project links, see "Paleoclimate Data," published by National Climatic Data Center http://www.ncdc.noaa.gov/data-access/paleoclimatology-data (accessed September 11, 2013). See also "Climate Data Guide," published by National Center for Atmospheric Research (NCAR) https://climatedataguide.ucar.edu/ (accessed September 11, 2013).

17   For example, Scuderi, L.A., "A 2000-Year Tree Ring Record of Annual Temperatures in the Sierra Nevada Mountains," *Science* 259 (1993): 1433–1436; Stahle, D.W. et al., "Cool- and Warm-Season Precipitation Reconstructions over Western New Mexico," *Journal of Climate* 22 (2009): 3729–3250;

18   For example, Cleaveland, Malcolm, and D.N. Duvick, "Iowa Climate Reconstructed from Tree Rings, 1640–1982," *Water Resources Research* 28 (1992): 2607; David Stahle, and Malcolm Cleaveland, "Tree-Ring Reconstructed Rainfall over the Southeastern USA During the Medieval Warm Period and Little Ice Age," *Climatic Change* 26 (1994): 199–212; Stahle, David, Malcolm Cleaveland, and J.G. Hehr, "North Carolina Climate Changes Reconstructed from Tree Rings: A.D. 372 to 1985," *Science* 240 (1988): 1517–19; Steinman, Byron A. et al., "1,500 Year Quantitative Reconstruction of Winter Precipitation in the Pacific Northwest," *Proceedings of the National Academy of Sciences* 109 (2012): 11619–11623.

19   For example, Graumlich, Lisa J., and Linda B. Brubaker, "Reconstruction of Annual Temperature (1590–1979) for Longmire, Washington, Derived from Tree Rings," *Quaternary Research* 25 (1986): 223–234; Briffa, K., P.D. Jones, and F.H. Schweingruber, "Tree-Ring Density Reconstructions of Summer Temperature Patterns across Western North America

very comprehensive studies of past droughts, including major historical events discussed below.[20] High-resolution analysis of lake and estuary sediments has also held out the promise of useful historical environmental data, especially in parts of the eastern US.[21]

2.2   *Archaeological Investigations and Native American History*

Native American archaeology and history offer another potentially useful tool for understanding the country's past climate. Although rarely focused on climate reconstruction per se, pre-Columbian archaeologists and historians have been far more interested in climatic change and impacts than other Americanists. Used carefully, their work can help reveal local and human dimensions of events in the proxy record, including migrations and changes in culture and land use, shedding light on periods before written evidence. Such archaeological work has been widespread, if sometimes locally focused, and has often made use of informative interdisciplinary techniques including zooarchaeology, paleopathology, and paleobotany (see examples in the sections below).[22]

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      since 1600," *Journal of Climate* 5 (1992): 735–754; Barber, V.A. et al., "Reconstruction of Summer Temperatures in Interior Alaska from Tree-Ring Proxies: Evidence for Changing Synoptic Climate Regimes." *Climatic Change* 63 (2004): 91–120; D'Arrigo, Rosanne et al., "Tree Growth and Inferred Temperature Variability at the North American Arctic Treeline," *Global and Planetary Change* 65 (2009): 71–82; Gennaretti, Fabio et al., "Volcano-Induced Regime Shifts in Millennial Tree-Ring Chronologies from Northeastern North America," *Proceedings of the National Academy of Sciences* 111 (2014): 10077–10082; Salzer, Matthew W. et al., "Five Millennia of Paleotemperature from Tree-Rings in the Great Basin, USA," *Climate Dynamics* 42 (2014): 1517–1526.

20   For example, Woodhouse, Connie A., and Jonathan T. Overpeck, "2000 Years of Drought Variability in the Central United States," *Bulletin of the American Meteorological Society* 79 (1998): 2693–2714; David Stahle et al., "Tree-Ring Reconstructed Megadroughts over North America Since AD 1300," *Climatic Change* 83 (2007): 133–149; Cook, Edward R. et al., "North American Drought: Reconstructions, Causes, and Consequences," *Earth Science Reviews* 81 (2007): 93–134, and Herweijer, Celine et al., "North American Droughts of the Last Millennium from a Gridded Network of Tree-Ring Data," *Journal of Climate* 20 (2007): 1353–1376.

21   For example, Willard, Debra A., Thomas M. Cronin, and Stacey Verardo, "Late-Holocene Climate and Ecosystem History from Chesapeake Bay Sediment Cores, USA," *The Holocene* 13 (2003): 201–214.

22   There have been two key reviews: Anderson, David G., "Climate and Culture Change in Prehistoric and Early Historic Eastern North America," *Archaeology of Eastern North America* 29 (2001): 143–186, and Foster, William C., *Climate and Culture Change in North America AD 900–1600* (Austin: University of Texas Press, 2012). Specific examples appear in the sections below.

2.3   *Documentary and Instrumental Record*

North America's documentary and instrumental data begin later than in Europe and have not received anywhere near the same scholarly attention. Nevertheless, written records and early weather measurements can contain a wealth of information awaiting systematic analysis and study.[23] Writings of early explorers and settlers, though still coming to grips with the peculiarities of the continent's climate, can offer useful impressions and phenological observations of a significant phase of the Little Ice Age in the late 16th and early 17th centuries (see below).[24] By the late 1600s, European colonists produced a growing volume of written observations, including weather diaries, almanacs, and records related to agriculture. The early eighteenth century saw the rapid rise of publishing and newspapers, particularly in the northeast and mid-Atlantic. These records have proven especially useful in extending long time-series of events back into the pre-instrumental period and in reconstructing major events, such as storms, not covered or only partly covered by instrumental data.[25] Systematic weather measurements began in the last decades of the 1700s, and regional weather observation networks grew up gradually over the nineteenth century.[26] Recent interest in the environmental effects of global warming has also led some historians and ecologists to look over weather and phenological data collected by historical figures such as Henry David Thoreau at Walden Pond.[27] National meteorological investigations first relied on private

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23   Perhaps the only comprehensive study of published records remains Ludlum, David, *Early American Winters 1604–1820*, 2 vols. (Boston: American Meteorological Society, 1966), still useful, if now somewhat dated. For a more recent survey of early written and instrumental sources see Baron, W.R., "Retrieving American Climate History: A Bibliographic Essay," *Agricultural History* 63 (1989): 7–35.

24   For example, Kupperman, Karen, "The Puzzle of the American Climate in the Early Colonial Period," *American Historical Review* 87 (1982): 1262–1289.

25   For example, Baron, William R. et al., "Frost-Free Record Reconstruction for Eastern Massachusetts, 1733–1980," *Journal of Climate and Applied Meteorology* 23 (1984): 317–319; Baron, William, *Growing Season Parameter Reconstructions for New England Using Killing Frost Records, 1697–1947* (Orono: Institute for Quaternary Studies University of Maine, 1996); Chenoweth, M., "A Reassessment of Historical Atlantic Basin Tropical Cyclone Activity, 1700–1855," *Climatic Change* 76 (2006): 169–240; and Mock, Cary J., "Tropical Cyclone Variations in Louisiana, USA, since the Late Eighteenth Century," *Geochemistry Geophysics Geosystems* 9 (2008): Q05V02.

26   For example, Hopkins, Edward J. and Joseph M. Moran, "Monitoring the Climate of the Old Northwest: 1820–95," in *Historical Climate Variability and Impacts in North America*, ed. Lesley-Ann Dupigny-Giroux and Cary J. Mock (Berlin: Springer, 2009), 171–188.

27   Primack, Richard B. *Walden Warming: Climate Change Comes to Thoreau's Woods* (Chicago: University Of Chicago Press, 2014). See also Druckenbrod, Daniel L. et al., "Late-

initiative, directed in the United States largely by the Smithsonian Institution, up to the creation of the National Weather Service in 1870 and Army Signal Service in 1874.[28] The data series produced by these efforts, available in various collections, remain largely unused despite their significant potential for reconstruction and impact studies.[29] In Canada, early settlers left even fewer records. However, some sources such as ship logs and documents of the Hudson's Bay Company have been employed in studies of historical climatology for Ontario and Quebec.[30] As of the writing of this article, a collaborative initiative was underway to gather and analyse early Canadian climate data more systematically.[31]

In the 20th century, concerns about the reliability and stability of climate data led to repeated efforts to improve the infrastructure for climate observation, including a large boost from the Cold War militarisation of climate science. In recent decades, as Paul Edwards has argued, computing has reshaped weather observation. The new instrumental record employs more satellite data and a combination of physical models based on theoretical principles and observational data to improve the predictive accuracy of simulation models. International efforts since the 1980s to digitise weather records and reduce uncertainties in comparing historical weather records have pushed climatology in the direction of using a blend of modeling and observations, and of smoothing the heterogeneity in observational data from different countries.[32]

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          Eighteenth-Century Precipitation Reconstructions from James Madison's Montpelier Plantation," *Bulletin of the American Meteorological Society* 84 (2003): 57–71.

28   On the early history of US meteorology: Fleming, James Rodger, *Meteorology in America, 1800–1870* (Baltimore: Johns Hopkins University Press, 1999).

29   For example, Mock Cary J., "Rainfall in the Garden of the United States Great Plains, 1870–1889," *Climatic Change* 44 (2000): 173–195, and examples in the sections below.

30   Wilson, Cynthia, "The Little Ice Age on Eastern Hudson/James Bay: The Summer Weather and Climate at Great Whale, Fort George and Eastmain, 1814–1821, as Derived from Hudson's Bay Company Records," *Syllogeus* 55 (1985): 147–190; Catchpole, A.J.W., "Hudson's Bay Company Ships' Log-Books as Sources of Sea Ice Data, 1751–1870," in *Climate since A.D. 1500*, ed. R.S. Bradley and P.D. Jones (London: Routledge, 1995), 17–39; Przybylak, Rajmund, and Zsuzsanna Vizi, "Air Temperature Changes in the Canadian Arctic from the Early Instrumental Period to Modern Times," *International Journal of Climatology* 25 (2005): 1507–1522; Houle, Daniel, Jean-David Moore, and Jean Povencher, "Ice Bridges on the St. Lawrence River as an Index of Winter Severity from 1620 to 1910," *Journal of Climate* 20 (2007): 757–764.

31   See: NICHE. Canadian Climate History, accessed January 11, 2015. http://niche-canada.org/research/canadian-climate-history/.

32   Edwards, Paul N., *A Vast Machine: Computer Models, Climate Data, And the Politics of Global Warming* (Cambridge, MA: MIT Press, 2010)

3 The Preindustrial Era

3.1 *From the Pleistocene to Holocene: Large-Scale Events and Impacts*

A growing body of archaeological evidence suggests large-scale climate events played a key role in early Amerindian migrations, cultures, and ecologies. When and how the first people got to America remains a contentious subject, but a growing consensus in archaeology and genetics points to a principal founding population that came through Beringia about ~20–15 thousand years ago (ka) (and almost certainly not before the last glacial maximum ~22ka).[33] The first millennia of human dispersals into America therefore correspond with the end of the last ice age and the beginnings of the current (Holocene) interglacial. The highly variable climate of the time—swinging rapidly between cold stadials and warm interstadial periods—influenced available migration routes and subsistence strategies, although the evidence is still too thin to say precisely how. Climate has also been implicated in one of the major environmental impacts of the period—North America's great megafaunal extinctions, including mammoths, glyptodonts, and giant ground sloths. Since newer finds have established that the big-game hunters of the Clovis culture (~13.2ka) were not the first Americans, Paul Martin's "Blitzkrieg" theory of rapid human overhunting now seems implausible.[34] However, the unusual number of lost species and genera, the predominance of large birds and mammals, and the close timing of faunal decline and human arrivals around the world all point to an anthropogenic role.[35] Current reviews and ecological modeling strongly suggest that rapid climate change would have placed slow-growing megafaunal populations under stress, and that human predation pushed them into extinction.[36]

Archaeologists have also begun to uncover the human consequences of these climate fluctuations, particularly the last major stadial known as the

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33 For recent reviews, see: Goebel, Ted, Michael R. Waters, and Dennis H. O'Rourke, "The Late Pleistocene Dispersal of Modern Humans in the Americas," *Science* 319 (2008): 1497–1502; Dillehay, Tom D., "Probing Deeper into First American Studies," *Proceedings of the National Academy of Sciences* 106 (2009): 971–978; and Reich, David et al., "Reconstructing Native American Population History," *Nature* 488 (2012): 370–374.

34 As argued most recently in Martin, Paul, *Twilight of the Mammoths* (Berkeley: University of California Press, 2005).

35 See Koch, P., and A. Barnosky, "Late Quaternary Extinctions: State of the Debate," *Annual Review of Ecology, Evolution, and Systematics* 37 (2006): 215–250.

36 For example, Prescott, Graham W. et al., "Quantitative Global Analysis of the Role of Climate and People in Explaining Late Quaternary Megafaunal Extinctions," *Proceedings of the National Academy of Sciences* 109 (2012): 4527–4531.

Younger Dryas (~12.9–11.6ka). Recent work appears to confirm earlier speculation that the sudden cold spell isolated populations and broke up the Clovis culture, encouraging regional variation, specialised tool-making, and ecological diversification.[37] The abrupt end of the Younger Dryas ushered in an 'optimum' of warming for several millennia, corresponding to the gradual increase in population and complexity of the early to middle archaic periods in Native American archaeology. This warming was interrupted by a global cold and drought event ~8.2ka, which certainly affected North America, although the human impacts are not yet clear.[38] The following four thousand years, known as the Mid-Holocene Transition, brought a dryer climate to much of the Northern Hemisphere with weaker monsoons and a southward shift in the Intertropical Convergence Zone. It has been associated with the rise of early urban civilisations in the "Old World", and may have had an analogous impact in parts of North America, including the growth of mound-building ceremonial centers such as Poverty Point, in today's Louisiana.[39] Another global drought event ~4.2ka, linked to the collapse of the Akkadian Empire and other "Old World" disruptions, probably reached America as well, although the human impacts are still unclear.[40]

American populations did not widely adopt agriculture until the late second millennium BCE in the Southwest, the first millennium CE in the Mississippi and Ohio River valleys, and later still in Canada, which likely limited vulnerability to earlier climatic shocks. Some previous studies[41] have tied the adoption of agriculture to climate events—including American analogs of the Roman Optimum (c. 300 BCE–300 CE) and Vandal Minimum (c. 400–800 CE) in

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37   For example, Anderson, David G. et al., "Multiple Lines of Evidence for Possible Human Population Decline/Settlement Reorganization During the Early Younger Dryas," *Quaternary International* 242 (2011): 570–583, and other articles in this issue.

38   Gregoire, Lauren J., Antony J. Payne, and Paul J. Valdes, "Deglacial Rapid Sea Level Rises Caused by Ice-Sheet Saddle Collapses," *Nature* 487 (2012): 219–222.

39   For recent evidence of aridity in mid-Holocene North America, see e.g., Karmakar, Moumita et al., "Diatom-Based Evidence of Regional Aridity during the Mid-Holocene Period in Boreal Lakes from Northwest Ontario (Canada)," *The Holocene* 25 (2015): 166–177. For impacts on Native American cultures see for example, Anderson, David, Kirk Maasch, and Daniel Sandweiss, ed., *Climate Change and Cultural Dynamics: A Global Perspective on Mid-Holocene Transitions* (London: Elsevier, 2007) and Louderback, Lisbeth A., Donald K. Grayson, and Marcos Llobera, "Middle-Holocene Climates and Human Population Densities in the Great Basin, Western USA," *The Holocene* 21 (2011): 366–373.

40   For example, Booth, R., "A Severe Centennial-Scale Drought in Midcontinental North America 4200 Years Ago and Apparent Global Linkages," *The Holocene* 15 (2005): 321–328.

41   Cited in Anderson, "Climate and Culture Change."

Eurasia[42]—but the links remain unclear, and little recent work appears to have been done on the topic. The early agricultural era also brings us into the period of much higher-resolution proxies, particularly tree rings, allowing reconstructions of smaller-scale events. These include a pronounced aridity in the Southwest during the early first millennium CE,[43] and a cold spell in the 6th century corresponding with the global 536CE volcanic event.[44] In all such cases, evidence of large-scale climate shifts will still have to be reconciled with more detailed local archaeological data indicating specific environmental impacts and human responses.

3.2   *The Medieval Warm, Little Ice Age, and Amerindian Civilisations*
Considerably more research in recent years has focused on the flourishing of complex cultures during the late prehistoric period, which corresponds to the "Medieval Climate Anomaly" (MCA) (~1000–1300CE) and early "Little Ice Age" (LIA) (from ~1300CE) in Eurasia. Recent pollen and tree-ring studies now provide high-resolution continental-scale reconstructions of temperatures during this period, which indicate that North America experienced a trend of medieval warming and early modern cooling broadly similar to that of Europe and Asia.[45] In more northerly latitudes of the Mississippi and Great Lakes basins, and eastern woodlands, the MCA appears to have been a particularly favourable time for the spread of agriculture, corresponding to the expansion of the

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42   A recent multiproxy reconstruction suggest that these episodes of warming and cooling, respectively identified by historians and climatologists of Europe also affected North America: see Ljungqvist, Fredrik Charpentier, "A New Reconstruction of Temperature Variability in the Extra-Tropical Northern Hemisphere During the Last Two Millennia," *Geografiska Annaler: Series A, Physical Geography* 92 (2010): 339–351.

43   Routson, Cody C., Connie A. Woodhouse, and Jonathan T. Overpeck, "Second Century Megadrought in the Rio Grande Headwaters, Colorado: How Unusual Was Medieval Drought?" *Geophysical Research Letters* 38 (2011): GL050015.

44   See contributions in Gunn, Joel, ed., *The Years Without Summer: Tracing A.D. 536 and Its Aftermath* (Oxford: Archaeopress, 2000).

45   Trouet, V. et al., "A 1500-Year Reconstruction of Annual Mean Temperature for Temperate North America on Decadal-to-Multidecadal Time Scales," *Environmental Research Letters* 8 (2013): 024008; Viau, A.E., M. Ladd, and K. Gajewski, "The Climate of North America during the Past 2000 Years Reconstructed from Pollen Data," *Global and Planetary Change*, *Perspectives on Climate in Medieval Time*, 84–85 (2012): 75–83. Regional studies of sediment cores have yielded similar results: see for example, Cronin, T.M. et al., "Medieval Warm Period, Little Ice Age and 20th Century Temperature Variability from Chesapeake Bay," *Global and Planetary Change* 36 (2003): 17–29. For a comparison of continents, see Ahmed, Moinuddin et al., "Continental-Scale Temperature Variability during the Past Two Millennia," *Nature Geoscience* 6 (2013): 339–346.

Mississippian culture. The LIA, by contrast, has been implicated in various archaeological studies finding evidence of rising warfare, migration, and malnutrition.[46] Of particular interest has been the rise and fall of Cahokia, once the largest settlement in North America, c.1050–1300CE. Proxy evidence points to rapid population growth and agricultural intensification during an especially favourable period for crops, followed by decline during significant droughts of the mid-12th and late 13th centuries and eventual abandonment in the less favourable climate of the early LIA.[47] In the Southwest, the MCA also brought major droughts around the same time, blamed for the collapse of the complex Hohokam and Anasazi cultures, which depended on steady precipitation for irrigated maize agriculture.[48] Therefore, in several cases of quick decline in population and complexity, we find major droughts in the tree-ring record. This coincidence is highly suggestive of a narrow agricultural base and vulnerability to climate shifts. However, precisely because the American tree-ring record is so strong, a word of caution may be in order. We know much more about drought than other environmental changes that may have played a role in this phase of Amerindian history, and further research may yet turn up new interpretations.

The west coast experienced periodic droughts during the Medieval Climate Anomaly similar to those in the Southwest, but with less intensity; and the inhabitants did not practice vulnerable irrigated agriculture. Some archaeology suggests that climate fluctuations may have driven California natives into larger settlements or greater social complexity.[49] Other studies suggest that temperature fluctuations from the MCA to LIA shifted the range of bison from the

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46   For example, Anderson, David G., David W. Stahle, and Malcolm K. Cleaveland, "Paleoclimate and Potential Food Reserves of Mississippian Societies: A Case Study from the Savannah River Valley," *American Antiquity* 60 (1995): 258–286.

47   Benson, Larry V., Timothy R. Pauketat, and Edward R. Cook, "Cahokia's Boom and Bust in the Context of Climate Change," *American Antiquity* 74 (2009): 467–483.

48   For example, Benson, Larry, Kenneth Petersen, and John Stein, "Anasazi (Pre-Columbian Native-American) Migrations During the Middle-12th and Late-13th Centuries—Were They Drought Induced?" *Climatic Change* 83 (2007): 187–213. According to Cook, Edward R et al., "North American Drought: Reconstructions, Causes, and Consequences," *Earth Science Reviews* 81 (2007): 93–134, medieval warmth brought a tendency for La Niña-like conditions, which often bring more drought to the western United States.

49   For example, Stine, Scott, "Extreme and Persistent Drought in California and Patagonia During Medieval Time," *Nature* 369 (1994): 546–549; Stine, Scott, "Medieval Climatic Anomaly in the Americas," in *Water, Environment and Society in Times of Climatic Change*, ed. Arie S. Issar and Neville Brown (Dordrecht: Kluwer Academic Publishers, 1998), 43–67; and Kennett, D., "Competitive and Cooperative Responses to Climatic Instability in Coastal Southern California," *American Antiquity* 65 (2000): 379–395.

Northern to Southern Plains, driving a similar movement in human populations who relied on bison for sustenance.[50] Archaeologists and historians have also long suspected that a colder phase of the LIA beginning in the late 16th century was responsible for the southward migration of the Iroquois and other Indian nations in America's northeastern woodlands during this period.[51] Recent high-resolution pollen studies from southern Quebec demonstrate abrupt climatic and environmental change during the late 1500s, appearing to confirm the hypothesis of climate-driven migration.[52]

3.3 *Climate and Colonial History*

Even under the best circumstances North America's stronger continental seasons and variable weather would have presented challenges to European colonists accustomed to the more mild maritime climate of their homeland. Adding to their confusion and unpreparedness, early explorers and colonists often arrived confidently expecting American climates to align with those of Europe at similar latitudes, which they do not.[53] Many of the first colonial expeditions came during the coldest phase of the LIA in North America during the late 16th and 17th centuries. Moreover, their arrivals frequently timed with spells of severe cold and drought, which aggravated problems of famine, disease, and conflict with Native Americans.[54] The earliest Spanish overland expeditions in the 1530s–1560s—those of Hernando de Soto, Álvar Núñez Cabeza de Vaca, Francisco Vázquez de Coronado, and Tristán de Luna y Arellano—all encountered exceptional winters by contemporary standards, including fre-

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50   Research on climate and bison ranges, mainly the work of Thomas Dillehay, is discussed in Foster, *Climate and Culture Change*, 57 *et passim*.

51   Richter, Daniel, *The Ordeal of the Longhouse: The People's of the Iroquois League in the Era of European Colonization* (Chapel Hill: University of North Carolina Press, 1992), 53; Fitzgerald, William, "Contact, Neutral Iroquoian Transformation, and the Little Ice Age," in *Societies in Eclipse: Archaeology of the Eastern Woodland Indians, A.D. 1400–1700*, ed. David S. Brose, C. Wesley Cowan and Robert C. Mainfort (Washington, D.C.: Smithsonian Institution Press, 2001), 37–47; Rice, James, *Nature and History in the Potomac Country: From Hunter-Gatherers to the Age of Jefferson* (Baltimore: The Johns Hopkins University Press, 2009), 26–46.

52   Paquette, Natalie, and Konrad Gajewski, "Climatic Change Causes Abrupt Changes in Forest Composition, Inferred from a High-Resolution Pollen Record, Southwestern Quebec, Canada," *Quaternary Science Reviews* 75 (2013): 169–180.

53   Kupperman, Karen, "The Puzzle of the American Climate in the Early Colonial Period," *American Historical Review* 87 (1982): 1262–1289.

54   See White, Sam, "'Shewing the difference betweene their conjuration, and our invocation on the name of God for rayne': Weather, Prayer, and Magic in Early American Encounters," *William and Mary Quarterly* 72 (2015): 31–54.

quent freezing weather deep in the American South.[55] The first Spanish colonies in Florida, Virginia, and South Carolina also suffered from ill-timed droughts and storms, probably contributing to the massacre of missionaries at Ajacán in 1570, the abandonment of Santa Elena in 1587, and conflict with the Guale Indians in the 1590s.[56] Juan de Oñate's expedition in New Mexico (1598–1608) likewise encountered serious drought and severe winters where the Rio Grande froze over solid for weeks on end; the poor weather contributed to conflict with Pueblo Indians and dissension among the first New Mexican colonists.[57]

Early English and French settlers were if anything even more unfortunate. The Roanoke and Jamestown colonies coincided with two of the worst droughts in that region for the past millennium,[58] contributing to early crop failures and water-borne illness.[59] Colonists at Jamestown and at the failed Sagadahoc colony in Maine also arrived during some of the coldest winters of the period, as some contemporaries noted.[60] Only a small fraction of the hundreds of early settlers survived the first few difficult years. Climate-driven migration and conflict may have been a factor as well in the rise of the powerful Powhatan chiefdom of Virginia and its conflict with these first colonists, as some

55   For examples, see Foster, *Climate and Culture Change*, 120–148; Blanton, Dennis, "The Factors of Climate and Weather in Sixteenth-Century La Florida," in *Native and Spanish New Worlds: Sixteenth-Century Entradas in the American Southwest and Southeast*, ed. Clay Mathers, Jeffrey M. Mitchem and Charles M. Haecker (Tucson: University of Arizona Press, 2013), 99–121; Van West, Carla R. et al., "The Role of Climate in Early Spanish-Native American Interactions in the US Southwest," *Native and Spanish New Worlds: Sixteenth-Century Entradas in the American Southwest and Southeast*, ed. Clay Mathers, Jeffrey M. Mitchem and Charles M. Haecker (Tucson: University of Arizona Press, 2013), 81–98.

56   For example, Paar, Karen L., "Climate in the Historical Record of Sixteenth-Century Spanish Florida: The Case of Santa Elena Re-examined," in *Historical Climate Variability and Impacts in North America*, ed. Lesley-Ann Dupigny-Giroux and Cary J. Mock (Dordrecht: Springer, 2009), 47–58. In all of these cases, early supply voyages were lost, colonists had trouble growing enough food, and demands on local Indians almost certainly exacerbated conflict.

57   White, Sam, "Cold, Drought, and Disaster: The Little Ice Age and the Spanish Conquest of New Mexico," *New Mexico Historical Review* 89 (2014): 425–458.

58   Stahle, David W. et al., "The Lost Colony and Jamestown Droughts," *Science* 280 (1998): 564–567.

59   Blanton, Dennis, "Drought as a Factor in the Jamestown Colony, 1607–1612," *Historical Archaeology* 34 (2000): 74–81.

60   See Kupperman, Karen, *The Jamestown Project* (Cambridge: Harvard University Press, 2007) for descriptions.

researchers have speculated.[61] Likewise, many of the first expeditions to New France, including Champlain's first winter in Quebec, were decimated by scurvy during long winters.[62]

There has been little work on climate and colonial history following these first vulnerable settlements, with only scattered acknowledgements in the historical literature.[63] One notable exception has been a recent study connecting a run of poor growing seasons, food shortage, and Indian-settler disputes in the outbreak of the Pequot War (1636–1638) in Massachusetts.[64] Likewise, historians of the Pueblo Revolt of the 1680s in New Mexico have for some years pointed to the possible role of intense drought in the run-up to rebellion.[65] These studies point to more research to be done on the role of climate and conflicts between colonists and Native Americans. A recent dissertation also examines how Indians and settlers in the Maritime Peninsula handled the cold winters of the late 17th century, opening broader questions of climate and cultural adaptation in the colonial period.[66] A related topic of some interest has been the

61   For example, Blanton, Dennis B., "The Climate Factor in Late Prehistoric and Post-Contact Human Affairs," in *Indian and European Contact in Context: The Mid-Atlantic Region*, ed. Dennis B. Blanton and Julia A. King (Gainesville: University Press of Florida, 2004), 6–21.

62   For tree-ring reconstructed growing seasons, see Archambault, S. and Y. Bergeron, "An 802-Year Tree-Ring Chronology from the Quebec Boreal Forest," *Canadian Journal of Forest Research* 22 (1992): 674–682. Descriptions of the winters can also be found in Ludlum, *Early American Winters.*

63   For example, Richter, Daniel K., *Facing East from Indian Country: A Native History of Early America* (Cambridge, MA: Harvard University Press, 2001), and Richter, Daniel K., *Before the Revolution: America's Ancient Past* (Cambridge, MA: Harvard University Press, 2011).

64   Grandjean, Katherine A., "New World Tempests: Environment, Scarcity, and the Coming of the Pequot War," *The William and Mary Quarterly* 68 (2011): 75–100. For more on the climate of New England during the 17th century, see Kupperman, Karen, "Climate and Mastery of the Wilderness in Seventeenth-Century New England," in *Seventeenth-Century New England*, ed. David Hall and David Allen (Boston: Colonial Society of Massachusetts, 1984), 3–37.

65   For example, Ivey, James, "'The Greatest Misfortune of All': Famine in the Province of New Mexico, 1667–1672," *Journal of the Southwest* 36 (1994): 76–100, and Cook et al., "North American Drought."

66   Wickman, Thomas M., "Snowshoe Country: Indians, Colonists, and Winter Spaces of Power in the Northeast, 1620–1727" (Ph.D. thesis, Harvard University, 2012). For further studies of Native American/First Nations adaptation during the colonial period, see for example, Nicholson, B.A. et al., "Climatic Challenges and Changes: A Little Ice Age Period Response to Adversity—The Vickers Focus Forager/Horticulturalists Move On," *Plains Anthropologist* 51 (2006): 325–333; Woollett, James, "Labrador Inuit Subsistence in the Context of Environmental Change: An Initial Landscape History Perspective," *American Anthropologist* 109 (2007): 69–84.

role of weather and crop disease in the outbreak of the Salem witch trials of 1692–1693, drawing on analogs with weather and witchcraft in early modern Europe; but the links here remain uncertain.[67]

3.4   *Revolution and Early Republic*

Apart from isolated weather events, the next period of climate history to receive serious attention begins with the Revolutionary War (1775–1783) continuing through the exceptional cold of the 1810s. In almost any war, weather plays an important role, and the Revolution was no exception. For some Americans, General George Washington crossing the ice-choked Delaware River late 1775 or leading his troops through cold winters in Pennsylvania remain iconic images of the Little Ice Age. However, these winters may not have been exceptionally cold for the time. Almost certainly the warm summer of 1780 played a more decisive military role by helping to spread malaria among Gen. Corwallis's troops in the South.[68] Yet winter that year turned exceptionally cold in the northern states, possibly influenced by volcanic events observed at the time.[69] This climatic fluctuation proved especially severe in the upper Great Plains, where freezing winters and the death of bison compounded an epidemic of smallpox among the region's Indian tribes in the early 1780s.[70]

The eruption of Laki in Iceland, June 1783, began another pronounced global climate event with significant repercussions in America. The following year witnessed extreme cold in much of the Northern Hemisphere, including heavy snow and long frosts across the eastern United States.[71] Moreover, 1784 began

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67   For example, Caporael, Linda R., "Ergotism: The Satan Loosed in Salem," *Science* 192 (1976): 21–26. On climate and witchcraft in Europe, see e.g., Pfister, Christian, "Climatic Extremes, Recurrent Crises and Witch Hunts: Strategies of European Societies in Coping with Exogenous Shocks in the Late Sixteenth and Early Seventeenth Centuries," *Medieval History Journal* 10 (2007): 33–73.

68   McNeill, J.R., *Mosquito Empires: Ecology and War in the Greater Caribbean, 1620–1914* (New York: Cambridge University Press, 2010), 214–215.

69   For example, Campanella, Thomas J., "'Mark Well the Gloom': Shedding Light on the Great Dark Day of 1780," *Environmental History* 12 (2007): 35–58.

70   Binnema, Theodore, *Common and Contested Ground: A Human and Environmental History of the Northwestern Plains* (Norman: University of Oklahoma Press, 2001) and Hodge, Adam R., "'In Want of Nourishment for to Keep Them Alive': Climate Fluctuations, Bison Scarcity, and the Smallpox Epidemic of 1780–82 on the Northern Great Plains," *Environmental History* 17 (2012): 365–403.

71   For example, Wood, Charles, "Climatic Effects of the 1783 Laki Eruption," in *The Year Without a Summer? World Climate in 1816*, ed. C.R. Harington (Ottawa: Canadian Museum of Nature, 1992), 58–77, and Stothers, Richard B., "The Great Dry Fog of 1783," *Climatic Change* 32 (1996): 79–89. A more recent study blames these events on the unusual ENSO

a decade of strong El Niño/Southern Oscillation (ENSO) anomalies: another global event with impacts in America that are just beginning to be explored.[72] The strongest El Niño phase, from 1789–1793, brought one of North America's only real famines since early colonial days[73]—an echo of more serious climate-related disturbances around the world at the time.[74] The 1810s witnessed more volcanic weather, culminating in the so-called "year without a summer" in 1816, following the eruption of Tambora (Indonesia). Again, the US and Canada were by no means the worst affected countries, but the impacts were considerable. Freezing weather and snow persisted through June and July in much of the northeast, ruining crops and bankrupting farms; and it is thought the events played an important role in emigration from New England to frontier land in the Midwest.[75] Another significant weather anomaly of the period came in 1827–1828, when an unusually warm winter across the Southeast brought early blooms, followed by an exceptionally damaging killer frost in April.[76] This event may also serve as a reminder that Little Ice Age, which came to an end in the 19th century, was not uniformly cold, and that seasonal

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cycle of the period rather than the volcanic dust—see D'Arrigo, Rosanne et al., "The Anomalous Winter of 1783–1784: Was the Laki Eruption or an Analog of the 2009–2010 Winter to Blame?," *Geophysical Research Letters* 38 (2011): L05706.

72   For example, Johnson, Sherry, *Climate and Catastrophe in Cuba and the Atlantic World in the Age of Revolution* (Chapel Hill: University of North Carolina Press, 2011).

73   Taylor, Alan, "'The Hungry Year': 1789 on the Northern Border of Revolutionary America," in *Dreadful Visitations: Confronting Natural Catastrophe in the Age of Englightenment*, ed. Alessa Johns (New York: Routledge, 1999), 145–182.

74   Grove, Richard, "The Great El Niño of 1789–93 and Its Global Consequences," *The Medieval History Journal* 10 (2007): 75–98.

75   Post, John D., *The Last Great Subsistence Crisis in the Western World* (Baltimore: The Johns Hopkins University Press, 1977); Stommel, Henry, *Volcano Weather: The Story of 1816, the Year Without a Summer* (Newport: Seven Seas Press, 1983); Smith, David C. et al., "Climatic Stress and Maine Agriculture, 1785–1885," in *Climate and History: Studies of Past Climates and the Impacts on Man*, ed. T.M.L. Wigley, M.J. Ingram and G. Farmer (Cambridge: Cambridge University Press, 1981), 450–464; Catchpole, A.J.W., "Evidence from the Hudson Bay Region of Severe Cold in the Summer of 1816," *Syllogeus* 55 (1985): 121–146; Baron, William, "1816 in Perspective: The View from the Northeastern United States," in *The Year Without a Summer? World Climate in 1816*, ed. C.R. Harington (Ottawa: Canadian Museum of Nature, 1992); and Klingaman, William K., and Nicholas P. Klingaman, *The Year Without Summer: 1816 and the Volcano That Darkened the World and Changed History* (New York: St. Martin's Press, 2013).

76   Mock, Cary et al., "The Winter of 1827–1828 over Eastern North America: A Season of Extraordinary Climatic Anomalies, Societal Impacts, and False Spring," *Climatic Change* 83 (2007): 87–115.

aberrations could still be as important as general temperature trends. Studies in both proxy and early instrumental records have revealed a strong drought on the Great Plains during the 1840s-50s, prefiguring the later regional droughts that would have such an impact on the American ranching industry (see section 4.3).[77] Severe weather during the American Civil War (1860–1865), including some notably cold and rainy spells and poor harvests in the South, has also begun to receive attention as part of recent environmental histories of the conflict.[78]

4   Climate History of the Industrial Era

4.1   *Introduction: The Anthropocene*

Since the industrialisation of America in the mid-19th century, both the causes and consequences of climate change have become inseparable from human decisions about land use and energy.[79] New patterns of urbanisation, agriculture, livestock production, and fuel use have created novel issues of vulnerability, adaptability, and resilience—and hastened anthropogenic global warming. The history of Euro-American settlement on the continent was pervasively a history of clearing forests and grasslands for settled agriculture, first by horse-drawn plow and later by oil-powered machinery. This rolling ecological transformation, led by North America for much of the modern age, was related to climate history in two reciprocal ways. First, from the late 19th through early 20th centuries, the advancing railways led a push of the plow into the plains

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77   Mock, Cary, "Historical Evidence of a Cold, Dry Summer during 1849 in the Northeastern Great Basin and Adjacent Rocky Mountains," *Climatic Change* 18 (1991): 37–66; Woodhouse, Connie A., Jeffrey J. Lukas, and Peter M. Brown, "Drought in the Western Great Plains, 1845–1856: Impacts and Implications," *Bulletin of the American Meteorological Society* 83 (2002): 1485–1493.

78   For example, Steinberg, *Down to Earth*, chapter 6; Fiege, Mark, *The Republic of Nature: An Environmental History of the United States* (Seattle: University of Washington Press, 2012), chapter 5; Bell, Andrew McIlwaine, *Mosquito Soldiers: Malaria, Yellow Fever, and the Course of the American Civil War* (Baton Rouge: Louisiana State University Press, 2010); and Brady, Lisa M., *War Upon the Land: Military Strategy and the Transformation of Southern Landscapes During the American Civil War* (Athens: University of Georgia Press, 2012).

79   The standard introduction to this concept is Steffen, Will, Paul J. Crutzen, and John R. McNeill, "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?," *AMBIO: A Journal of the Human Environment* 36.8 (2007): 614–621.

and prairies,[80] which proved precarious in the face of that region's severe climate and sudden unpredictable weather. Second, America's agricultural expansion both contributed to global warming and may prove sensitive to the changes it brings.

As the industrial era accelerated, it relied increasingly on fossil fuels, mainly coal and oil. This transformation of human energy foundations contributed not only to the depletion of finite reserves, but also soil and water pollution and the intensification of the atmospheric greenhouse effect. Many of the components of these elaborate processes have been studied in rich detail, but they have not yet been fully synthesised with the work of American climate history. The following discussion indicates some of the major components of a future synthesis, with a discussion of research underway on the Great Plains.

4.2   *Land Clearance and Restoration*

The historic conversion of North American forests and grasslands for farming and grazing, and the corresponding release of carbon from soils to the atmosphere, has made a globally important contribution to climate change. While now recognised that Amerindian fire had already left significant impacts on the landscape,[81] white settlement in the past four centuries—particularly the last century and a half—has brought unprecedented change. The early clearance of the Northeast for farms and the old South for plantations accelerated over the eighteenth and early nineteenth centuries. From the mid-1800s onward commercial logging spearheaded clearance first in the Midwest and then much of the still forested interior South; while forest clearance in the West was tempered by the creation of state and national park and forest systems beginning the 1870s.[82]

In the United States, historians can track the spread of population through the national census since 1790, and the conversion of land through the agricultural census since 1850. Recent attention to the detailed historical record has provided greater resolution for physical and biological scientists interested in the terrestrial dimensions of the carbon cycle and climate change.[83] Soil disturbance, such as plowing, alters the original soil structure and typically

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80   White, Richard, *Railroaded: The Transcontinentals and the Making of Modern America* (New York: Norton, 2012).

81   For example, Krech, Shephard, *The Ecological Indian: Myth and History* (New York, 1999).

82   Williams, Michael, *Americans and Their Forests: A Historical Geography* (New York: Cambridge University Press, 1989).

83   Waisanen Pamela J., and Norman B. Bliss, "Changes in Population and Agricultural Land in Coterminous United States Counties, 1790 to 1997," *Global Biogeochemical Cycles* 16 (2002): 84-1–84-19.

releases 20–40 percent of soil organic carbon within the first generation of land conversion; and poor early agricultural practices failed to restore enough organic matter to plowed land, amend soils with sufficient fertiliser, or take steps to prevent soil erosion.[84] It has been estimated that the global carbon budget receives up to one-third of its anthropogenic contributions from terrestrial ecosystems. Over the period from 1850 to 2000, terrestrial systems in the coterminous United States released approximately 21 billion tons of carbon more than they were able to absorb.[85]

Since wood consumption and agricultural expansion peaked in the early 20th century, parts of North America have seen a return of woodlands and tall- and short-grass prairie.[86] As early as the 1860s, eastern farmers began to fall to competition from the more productive soils of the interior, promoting reforestation in sections of the eastern seaboard, particularly New England. Research at the Harvard Forest preserve in Massachusetts suggests that landscapes once 70 percent farmland have reverted mainly to forest. These secondary growth forests are markedly different in composition, structure, and function after centuries of land use. Nevertheless, the recovery and protection of these secondary forests remains important to sequestration at a continental scale.[87]

4.3   *Animals and Climate History*

In American history, as throughout global history, animals have proven a source of both resilience and vulnerability to climate change and extreme weather.[88] On the one hand, abundant livestock served as an important feature of early American agriculture, which was forced to adapt to poorer soils in the South and Northeast. Animals provided manure and alternative subsistence

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84   Hartman, Melannie et al., "Impact of Historical Land Use Changes in the U.S. Great Plains, 1883 to 2003," *Ecological Applications* 21 (2011): 1105–1119.

85   Waisanen and Bliss, "Changes in Population and Agricultural Land," 84-2. Some estimates place the losses of soil carbon much higher.

86   In some cases, Native American burning had formerly thinned out these forests. The abandonment of agricultural land combined with fire suppression created more dense forests in some regions than had probably ever been present during the Holocene.

87   Foster, D. et al., "The Environmental and Human History of New England," 43–100, and G. Motzkin and D. Foster, "Insights for Ecology and Conservation," in *Forests In Time: the Environmental Consequences of 1,000 Years of Change In New England*, ed. David R. Foster and John D. Aber (New Haven: Yale University Press, 2004): 367–393.

88   For a general discussion, see the contribution of Sam White ("Animals, History, and Climate Change") in Carey, Mark, Philip Garone, Adrian Howkins, Georgina H. Endfield, et al., "Forum: Climate Change and Environmental History," *Environmental History* 19 (2014): 281–364.

and income in times of poor crop yields, particularly in adverse climates.[89] On the other hand, animals could succumb to exposure and disease during especially severe weather. The worst panzootic outbreaks, such as equine flu in 1872, could paralyse urban and agricultural functions that depended on animal power.[90]

In the mid- to late 19th century, climate fluctuations in the Great Plains helped drive a wave of ranching booms and busts. As Indian and white hunters began to drive the bison to near extinction,[91] expanding railroad networks and a phase of relatively mild weather encouraged a rapid growth in Western ranching over the late 1850s and 1860s. Following setbacks during a severe winter and high cattle mortality in 1871–1872, the expansion of ranching continued over the following decade. Then starting in 1884, a series of weather-related disasters crippled the industry. A freezing winter in Colorado and Nebraska (1884–1885) was followed by serious drought and wild fires in the southern plains (1885–1886). The next two winters brought exceptional cold and blizzards across the plains, as far south as Texas, wiping out many herds.[92] The arctic blast of January 1888 gained particular notoriety as the "children's blizzard" for the scores of Dakota and Nebraska schoolchildren killed in the sudden cold.[93] The Canadian prairies suffered a similarly destructive winter in 1906–1907, which brought heavy losses to the region's once booming ranching industry.[94]

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89   On early agropastoral adaptation, see Donahue, Brian, *The Great Meadow: Farmers and the Land in Colonial Concord* (New Haven, CT: Yale University Press, 2004); on soil improvement: Stoll, Steven, *Larding the Lean Earth: Soil and Society in Nineteenth-Century America* (New York: Hill and Wang, 2002).

90   See McShane, Clay and Joel Tarr, *The Horse in the City: Living Machines in the Nineteenth Century* (Baltimore: Johns Hopkins University Press, 2007).

91   See Isenberg, Andrew, *The Destruction of the Bison: An Environmental History, 1750–1920* (New York: Cambridge University Press, 2000).

92   The series of disasters is narrated in Steinberg, *Down to Earth*, 130–133. For specific analysis of weather and impacts, see also Mock, Cary J., "Rainfall in the Garden of the United States Great Plains, 1870–1889," *Climatic Change* 44 (2000): 173–95 and Richmond, A., and W.R. Baron, "Precipitation, Range Carrying Capacity and Navajo Livestock Raising, 1870–1975," *Agricultural History* 63 (1989): 217–230.

93   Laskin, David, *The Children's Blizzard* (New York: Harper Collins, 2004).

94   Wynn, Graeme, *Canada and Arctic North America: An Environmental History* (Santa Barbara: ABC-CLIO, 2006), 249–50.

4.4   *Interior Agriculture and the Dust Bowl*

Agricultural history is a long-standing and richly detailed field of study, though this tradition has mostly been separate from environmental history. The integration of agricultural and environmental history is now understood as studies of agroecosystems. But here too, integration of narrative history with the science of climate change remains embryonic. Detailed understanding is emerging from an intensive collaborative study underway of the transformation of native prairie to intensive agriculture on the Great Plains, the continent's heartland.[95]

The expansion of agriculture into the plains followed the ranching boom described in the previous section. Initial exploration found the West unpromising for agriculture; and as a founding director of the US Geological Survey, John Wesley Powell did little to dissuade the prevailing view of the region as a Great American Desert, too dry for intensive cropping. His early reports famously recommended that the US alter its homestead policy to accommodate the appropriate use of western lands, arguing in particular for smaller parcels based on cooperative irrigated agriculture.[96] Nevertheless land-hungry households poured into the region between the 1870s and the 1890s, some led by overly optimistic notions of the region's climate. Boosters shamelessly promoted the myth that "rain follows the plows".[97]

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95   For a brief overview see Gutmann, Myron P. et al., "Population and Environment in the U.S. Great Plains," in *Population, Land Use, and Environment: Research Directions*, ed. B. Entwisle and P.C. Stern, (Washington, D.C.: The National Academies Press, 2005), 84–105. Digitised county-level data on agricultural and demographic change from 1870 to 2000 are available online at the University of Michigan, see Gutmann, Myron P., "Great Plains Population and Environment Data: Agricultural Data, 1870–1997 [United States]." ICPSR04254-v1, Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2005-06-22, accessed January 10, 2015. http://doi.org/10.3886/ICPSR04254.v1; and Gutmann, Myron P., "Great Plains Population and Environment Data: Social and Demographic Data, 1870–2000 [United States]." ICPSR04296-v2. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2007-02-07, accessed January 10, 2015. http://doi.org/10.3886/ICPSR04296.v2.

96   Courtland Fite, Gilbert, *The Farmers' Frontier, 1865–1900* (New York: Holt, Rinehart and Winston), 196; Steinberg, *Down to Earth*, 116–117; and Worster, Donald, *A River Running West: the Life of John Wesley Powell* (Oxford: Oxford University Press, 2001), chapter 9.

97   On the history of weather modification theories and efforts, see Fleming, James Roger, *Fixing the Sky: The Checkered History of Weather and Climate Control* (New York: Columbia University Press, 2010). On the history of American attitudes towards arid lands and the "rain follows the plow" myth, see Culver, Lawrence, "Manifest Destiny and Manifest Disaster: Climate Perceptions and Realities in United States Territorial Expansion," in

Consequently, parts of the southern plains proved especially vulnerable to a major drought during the 1930s.[98] Farming had expanded considerably to meet rising demand during and after World War I, including the plowing of native grassland in parts of Kansas, Oklahoma, and Texas. The ensuing "Dust Bowl" brought tremendous losses in wind-blown soil, lost crops, and dead animals and helped drive dramatic emigration from the region, already underwritten by the economic collapse of the Great Depression. The Southern Plains had always been prone to drought, and dust storms were hardly unknown before the great plow up.[99] New Deal assessments in the wake of the disaster were probably too pessimistic, and similar droughts have recurred without such destructive consequences. Yet the era of land conversion added significantly to the accumulated risks. Even though farmers were generally careful to avoid plowing marginal lands, the loss of soil carbon and the feedback between plowing and local climate effects has been unmistakable over the long term. The climatic effect of land conversion has warmed daily maximum temperature throughout the plains, according to several regional studies.[100] Historical interpretations of the event have varied considerably, some focusing on environmental missteps, others on the region's long-term resilience in spite of climate fluctuations.[101] While less famous than the American Dust Bowl, the

American Environments: Climate Cultures Catastrophe, ed. Christof Mauch and Sylvia Mayer (Heidelberg: Universitätsverlag Winter, 2012), 7–30.

98   For causes and models of the drought, see Schubert, S. et al., "On the Cause of the 1930s Dust Bowl," *Science* 303 (2004): 1855–1859. In their global simulations of the 20th century, for instance, the authors find a continuing association between below normal precipitation in in the Great Plains and cool Pacific sea surface temperatures (SST). In the 1930s, a cool Pacific SST was combined with a warm Atlantic SST anomaly. See also Cook, Benjamin I., Richard Seager, and Jason E. Smerdon, "The Worst North American Drought Year of the Last Millennium: 1934," *Geophysical Research Letters* 41 (2014): 7298–7305.

99   Malin, James C., "Dust Storms, 1850–1900," *Kansas Historical Quarterly* 14 (May, August, and November 1946): 129–144, 265–296, 391–413.

100 Geoff Cunfer, "Causes of the Dust Bowl," in *Past Time, Past Places: GIS for History*, ed. A.K. Knowles (Redlands: ESRI Press 2002), 93–104; Sylvester, Kenneth M. and Eric Rupley, "Revising the Dustbowl: High Above the Kansas Grasslands," *Environmental History* 17 (2012): 603–633; Eastman, J.L., M.B. Coughenour, and R.A. Pielke Sr., "The Regional Effects of CO_2 and Landscape Change Using a Coupled Plant and Meteorological Model," *Global Change Biology* 7 (2001): 794–815; and Marchildon, Gregory P. et al., "Drought and Institutional Adaptation in the Great Plains of Alberta and Saskatchewan, 1914–1939," *Natural Hazards* 45 (2008): 391–411.

101 For example, Worster Donald, *Dust Bowl: The Southern Plains in the 1930s* (New York: Oxford University Press, 1979) and Cunfer, Geoff, *The Great Plains: Agriculture and Environment* (College Station: Texas A&M University Press, 2005). For a global perspective of

Canadian prairies—particularly the region known as Palliser's Triangle—also suffered major droughts and dust storms in the 1920s and 1930s following two decades of expanding grain agriculture.[102]

4.5   *Climate in Recent History*

In the 20th century, the US and Canada grew to become predominately urbanised, industrial, or post-industrial nations. Yet as they outgrew the vulnerabilities of agrarian society, new climate-related risks emerged which were tied to cities, suburbs, and automobile and fossil-fuel dependency. This phase of North America's climate history has been perhaps the least discussed of all, and the following section can do no more than point to new directions for further synthesis and research.

As a dimension of environmental history, urban and industrial historiography has been less developed than in Europe but has been rapidly growing with regional case studies.[103] So far, little of this work has focused on climate *per se.* As a general rule it would seem that urbanisation has concentrated both vulnerabilities and adaptive capacity. In this regard, American environmental history could benefit from more synthesis of urban history and the history of weather-related disasters, particularly flooding and hurricanes, which have become more costly over the past century as urban expansion creates more exposure.[104] Nevertheless, it remains unclear how far changes in storm frequency or intensity relate to underlying changes in climate, including global warming.[105]

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similar events, see Glantz, Michael H., ed., *Drought Follows the Plow: Cultivating Marginal Areas* (New York: Cambridge University Press, 1994).

102   Wynn, *Canada*, 251–256.

103   Overviews include Tarr Joel, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (Akron, OH: University of Akron Press, 1996); Melosi, Martin, *Coping with Abundance: Energy and Environment in Industrial America* (Philadelphia: Temple University Press, 1985); and Melosi Martin, *The Sanitary City* (Baltimore: Johns Hopkins University Press, 2008). For local histories, see for example, Kelman, Ari, *A River and Its City: The Nature of Landscape in New Orleans* (Berkeley: University of California Press, 2003); Brechin, Gray, *Imperial San Francisco: Urban Power, Earthly Ruin* (Berkeley: University of California Press, 2006); and Klingle, Matthew, *Emerald City: An Environmental History of Seattle* (New Haven, CT: Yale University Press, 2007). Studies of social and institutional response to increasing pollution are represented by Stradling, David, *Smokestacks and Progressives: Environmentalists, Engineers, and Air Quality in America*, 1881–1951 (Baltimore: Johns Hopkins University Press, 1999).

104   See Steinberg, Ted, *Acts of God: The Unnatural History of Natural Disaster in America* (New York: Oxford University Press, 2000).

105   On the one hand, warmer years since the early 20th century have tended to experience more frequent and severe hurricanes—see Aslak Grinsted, John C. Moore, and Svetlana

Suburbs, perhaps even more than cities, will also need to find a place in a contemporary climate history. Again, while studies of suburban environmental history have multiplied, they contain little specifically addressing climate change.[106] Suburbanisation, which has captured the plurality of US population since the 1970s, threatens to reverse benefits from reforestation in eastern America, besides contributing to local and global climate changes through further land conversion, deforestation, and urban and exurban heat islands.[107] More significantly, this geographical shift has led to far higher automobile use and domestic energy consumption, amplifying North America's contribution to climate change and posing serious obstacles to mitigation. The paths of energy consumption have amplified the impact of black carbon and other pollutants, from combustion engines, which add to atmospheric soot and particulates, and are a significant cause of rapid warming in the Northern Hemisphere.[108] Moreover, suburbanisation has been tied to a general transformation in American consumerism, from shopping malls to big box stores to fast food,[109] which represents another growing field for environmental history with significant implications for global climate.[110]

Jevrejeva, "Homogeneous Record of Atlantic Hurricane Surge Threat Since 1923," *Proceedings of the National Academy of Sciences* 109 (2012): 19601–19605. On the other hand, longer documentary reconstructions suggest that periods in the 19th century were at least as storm-prone as recent decades—see Mock, Cary J., "Tropical Cyclone Variations in Louisiana, USA, since the Late Eighteenth Century," *Geochemistry Geophysics Geosystems* 9 (2008): Q05V02.

106   For example, Jackson, Kenneth, *Crabgrass Frontier: The Suburbanization of the United States* (New York: Oxford University Press, 1985); Rome, Adam, *The Bulldozer in the Countryside* (New York: Cambridge University Press, 2001); and Culver, Lawrence, *The Frontier of Leisure: Southern California and the Shaping of Modern America* (New York: Oxford University Press, 2010). Culver's current work addresses climate more directly.

107   Grimm, Nancy B. et al., "The Changing Landscape: Ecosystem Responses to Urbanization and Pollution across Climatic and Societal Gradients," *Frontiers in Ecology and the Environment* 6 (2008): 264–272; Drummond, Mark A. and Thomas R. Loveland, "Land-use Pressure and a Transition to Forest-cover Loss in the Eastern United States," *BioScience* 60 (2010): 286–298; and Zaks, David, and Christopher J. Kucharik, "Data and Monitoring Needs for a More Ecological Agriculture," *Environmental Research Letters*, 6 (2011): 1–10.

108   Bond, T.C. et al., "Bounding the Role of Black Carbon in the Climate System: A Scientific Assessment," *Journal of Geophysical Research: Atmospheres* 118 (2013): 5380–5552.

109   For example, McCarthy, Tom, *Auto Mania: Cars, Consumers, and the Environment* (New Haven: Yale University Press, 2007).

110   For example Pfister, Christian, "The '1950s Syndrome' and the Transition from a Slow-Going to a Rapid Loss of Global Sustainability," in Frank Uekoetter, ed., *The Turning Points of Environmental History* (Pittsburgh: University of Pittsburgh Press, 2010); Fox, Richard

Energy history has been a growing field in North America—though again, most studies have not focused directly on climate history. Global surveys of the history of the fossil fuel era have begun to appear, ranging from lively journalistic overviews to more rigorous technical studies.[111] Most of these are narrative histories, from global to local in scale, with integration into the scientific work of studying carbon dioxide emissions only just beginning.[112] These studies need to be set in the framework of historical trends in rising energy use and shifting energy sources over the past century.[113]

Regarding the impacts of global warming, it remains difficult to assign any particular event to anthropogenic climate change rather than natural

W. and T.J. Jackson Lears, ed., *The Culture of Consumption: Critical Essays in American History, 1880–1980* (New York: Pantheon, 1983); Strasser, Susan, *Satisfaction Guaranteed: The Making of the American Mass Market* (Washington: Smithsonian, 1995); and Cohen, Lizabeth, *A Consumers' Republic: The Politics of Mass Consumption in Postwar America* (New York: Knopf, 2003). On the global impacts of American consumption: Soluri, John, *Banana Cultures: Agriculture, Consumption, and Environmental Change in Honduras and the United States* (Austin: University of Texas Press, 2005) and Tucker, Richard P., "The Global Ecological Reach of the United States: Exporting Capital and Importing Commodities," in *A Companion to American Environmental History*, ed. Douglas Cazaux Sackman (Walden, MA: Wiley-Blackwell, 2010), 505–528.

111   For example, Crosby, Alfred, *Children of the Sun* (New York: Norton, 2006); Smil, Vaclav, *Energy in World History* (Boulder: Westview, 1994); Smil, Vaclav, *Transforming the Twentieth Century: Technical Innovations and Their Consequences* (Oxford: Oxford University Press, 2006), chapter 2; Freese, Barbara, *Coal: A Human History* (New York: Penguin 2003); Yergin, Daniel, *The Prize* (New York: Touchstone, 1991); Shah, Sonia, *Crude: The Story of Oil* (New York: Seven Stories Press, 2004); Black, Brian, *Crude Reality: Petroleum in World History* (Lanham MD: Rowman & Littlefield, 2012). A global survey of the contemporary situation is Maull, Hanns, *Europe and World Energy* (London: Butterworths, 1980).

112   Important local and regional studies include Black, Brian, *Petrolia: The Landscape of America's First Oil Boom* (Baltimore: Johns Hopkins University Press, 2000); Paul Sabin, *Crude Politics: The California Oil Market, 1900–1940* (Berkeley: University of California Press, 2005); Andrews, Thomas G., *Killing for Coal: America's Deadliest Labor War* (Cambridge: Harvard University Press, 2008), on a bloody class conflict in eastern Colorado in 1914; Santiago, Myrna, *The Ecology of Oil* (Cambridge: Cambridge University Press, 2006), a model for environmental history, on the Caribbean lowlands of Mexico; and Nikiforuk, Andrew, *Tar Sands: Dirty Oil and the Future of a Continent* (Vancouver: Greystone, 2008) on northern Alberta in recent years.

113   See for example, Smil, Vaclav, *Transforming the Twentieth Century: Technical Innovations and Their Consequences* (Oxford: Oxford University Press, 2006); Smil, Vaclav, *Energy in World History* (Boulder: Westview Press, 1994); Smil, Vaclav, *Energy at the Crossroads: Global Perspectives and Uncertainties* (Boston: MIT Press, 2003); and Nye, David E., *Consuming Power: A Social History of American Energies* (Cambridge: MIT Press, 1998).

variability. Nevertheless, certain environmental changes such as the decline of snowpacks in the southern Rockies already stand out from anything in the late Holocene record.[114] And even more dramatic changes have begun in Arctic North America, where sea and land ice are retreating quickly.[115] Many of the changes were first noticed in the sub-Arctic during the 1930s, as warm temperatures delayed the winter fishery on northern lakes, reducing catches and affecting the spawning of freshwater species. Recent research has also shown that nutrient levels in the lakes in the Mackenzie River delta in the Canadian Arctic have been declining in the 20th century due to extensive thawing of permafrost.[116] Ecologists who work with climate models worry about the large warming trends predicted in the northern interior of the continent and lengthening growing season in northern latitudes.[117]

5 Summary and Conclusion

Climate and weather have played an often overlooked role in North American history from earliest times to the present. While the US and Canada possess abundant physical and written climate and weather records, the work of systematic reconstruction is still relatively new and incomplete. Nevertheless, archaeological and historical work can already demonstrate climate's impact on Native American and colonial life. Major climatic events and episodes of extreme weather continued to have social, economic, and sometimes demographic consequences into modern times, from the "year without a summer" through the "Dust Bowl" and beyond. In recent times, however, rapid urbanisation, suburbanisation, and technological change have in some ways transformed the North American relationship to climate. Some vulnerabilities have diminished while others have strengthened. Moreover, human activities—and, disproportionately, *American* and increasingly Canadian affluence—have

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114   Pederson, Gregory T. et al., "The Unusual Nature of Recent Snowpack Declines in the North American Cordillera," *Science* 333 (2011): 332–335.

115   For an overview, see Piper, Liza, "The Arctic and Subarctic in Global Environmental History," in *A Companion to Global Environmental History*, ed. J.R. McNeill and Erin Stewart Mauldin (Oxford: Wiley-Blackwell, 1012), 153–166.

116   Thienpont, J.R. et al., "Biological Responses to Permafrost Thaw Slumping in Canadian Arctic Lakes," *Freshwater Biology* 58 (2013): 337–353

117   Ramankutty, Navin, C. Delire, and P. Snyder, "Feedbacks between Agriculture and Climate: An Illustration of the Potential Unintended Consequences of Human Land Use Activities," *Global and Planetary Change* 54 (2006): 79–93.

begun altering climate, overtaking natural variability as a source of change and uncertainty for the century ahead.

Environmental history, even more than most historical fields, has been and will be shaped by contemporary concerns. As global warming emerges as a leading issue of the 21st century, scholarly attention in North America, and around the world, will turn ever more to reconstruction and impacts of climate changes in the past. As seen in this review, the outlines of that story may already be clear, yet much work remains to be done. The field does not lack so much for data or ideas, as for dedicated historians both patient enough for the work of careful synthesis and analysis and bold enough to take a novel perspective on the past that challenges some received ideas about North American history.

CHAPTER 5

Hurricanes in New Orleans: Disaster Migration and Adaptation, 1718–1794

Eleonora Rohland

Abstract

This chapter explores the question what the first generation of French settlers of the Louisiana Gulf Coast and New Orleans knew about hurricanes, and how they and later generations of creoles and newcomers adapted to the recurring hurricane hazard. The article starts out with a snapshot of French Louisiana's first group of settlers in order to establish the state of early hurricane knowledge in the colony. The hurricane and flood hazards, which both affect the city—the former less frequently than the latter—are juxtaposed and adaptation measures compared before diving into three hurricane case studies spanning the French (1718–1762) as well as the Spanish colonial period (1762–1803) of New Orleans. The case studies show that the city's societies remained vulnerable to hurricane impacts throughout the eighteenth century and that disaster migration—permanent migration in the aftermath of disasters—was resorted to in particular after back-to-back hurricane events.

1   Introduction

Louisiana was founded in 1682 by the Frenchman René-Robert Cavelier, Sieur de la Salle. The first settlers from France and New France ("Canada" in the French sources) were brought to the Gulf coast by the Iberville expedition in 1699. In the fall of 1717, when the building of New Orleans "thirty leagues up-river" from the mouth of the Mississippi began, the first French colonials had almost had twenty years of time to familiarise themselves with the Gulf Coast and Mississippi Delta environment and climate.[1] Twenty years may sound like a long time to learn about important environmental factors such as flooding,

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1   Giraud, Marcel, *Histoire de la Louisiane Française: L'Époque de John Law (1717–1720)*, 1st ed., 4 vols, vol. 3 (Paris: Presses universitaires de France, 1953), 317. The league (*lieue*) of the Île-de-France (Paris) measured 4.18 km (i.e. 2.5 miles) in length. Delsalle, Paul, *Vocabulaire historique de la France moderne: XVIe - XVIIe - XVIIIe Siècles*, 2nd ed. (Paris: Armand Colin, 2007), 74.

local climatic patterns and the occurrence of hurricanes.[2] In particular, the French had the advantage of learning from the indigenous Gulf Coast population.[3] However, according to environmental archaeologist Marcy Rockman, it may take as long as one generation (35 years) or more to acquire robust knowledge about local climatic patterns, the carrying capacity of a given soil, or the flood regime of a river.

After the beginning of colonisation on the Gulf Coast in 1699, the first generation of French settlers had experienced a hurricane[4] which hit Dauphin Island, a barrier island located off Mobile Bay, in 1715.[5] Despite this previous occurrence, the hurricane that hit New Orleans on September 12, 1722 apparently surprised the colonial officials, planters and even more so a large part of the only recently arrived German settlers and African slaves. Even though the French term for hurricane, *ouragan*, was used in the colonial correspondence, implying familiarity with the meteorological occurrence, the Natchez planter Antoine Simon Le Page du Pratz, an eye-witness to the 1722 hurricane, described it as a "phenomenon [...] which frightened the whole province: the

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2   Rockman, Marcy, "New World with a New Sky: Climatic Variability, Environmental Expectations, and the Historical Period Colonization of Eastern North Carolina," *Historical Archaeology* 44 (2010): 4–5; and Rockman, Marcy, "Knowledge and Learning in the Archaeology of Colonization," in *Colonization of Unfamiliar Landscapes: The Archaeology of Adaptation*, ed. Marcy Rockman and James Steele (New York: Routledge, 2003), 15.

3   For a discussion of the term "indigenous environmental knowledge" see Ellen, Roy F. and Holly Harris, "Introduction," in *Indigenous Environmental Knowledge and its Transformations: Critical Anthropological Perspectives*, ed. Roy F. Ellen, Peter Parkes and Alan Bicker (Amsterdam: Harwood Publishers, 2000), 4–5; and Antweiler, Christoph, "Local Knowledge and Local Knowing: An Anthropological Analysis of Contested 'Cultural Products' in the Context of Development," *Anthropos* 93.4/6 (1998): 471.

4   Historical accounts of hurricanes need to be treated cautiously, since the term was not always used in our modern, narrowly defined sense (designating "a tropical cyclone with maximum sustained surface winds of at least 33 m/s (74 mph)", see Emanuel, Kerry, *Divine Wind: The History and Science of Hurricanes* (Oxford: Oxford University Press, 2005), 21). Hence, cross-checking with further sources and historical hurricane chronologies reconstructed by historical climatologists is essential. For example Chenoweth, Michael, "A Reassessment of Historical Atlantic Basin Tropical Cyclone Activity, 1700 to 1855," *Climatic Change* 76 (2006): 169–240.

5   Journal de Diron D'Artaguiette, ANF, Colonies, C13 C 2, Fo. 198v. The remark about the 1715 hurricane is in the margin. An English translation of Diron D'Artaguiette's Journal can be found in Mereness, Newton Dennison, *Travels in the American Colonies*, ed. National Society of the Colonial Dames of America (New York: The Macmillan Company, 1916), 15–96. See Chenoweth, "Reassessment" for an assessment of historical hurricanes in the Atlantic including the 1715 hurricane which occurred between October 14 and 20.

terror was all the more well-founded as no one could guess its cause nor foresee its effects".[6]

Le Page du Pratz' statement may stand as an example for the colonial core experience of being confronted with unfamiliar environments and raises several questions concerning the development of hurricane knowledge and adaptation to those recurring hazards. What did the French colonial officials and settlers who came to the shores of the Gulf Coast know about hurricanes? And how did French (and Spanish) New Orleanians deal with their hazardous environment, that is, how did they adapt to hurricanes and to the annually recurring river floods over the long-term?

I will try to answer these questions by first presenting a snapshot of the colony's population on the eve of its first hurricane experience in 1722. Along a timeline of hurricane impacts in New Orleans I will, next, provide brief accounts of three particularly devastating back-to-back hurricane events that occurred throughout the city's French and Spanish reigns, between 1718 and 1794. Conclusively, I will appraise the adaptive practices that developed in New Orleans with regard to hurricanes between the city's foundation in 1718 and the eve of the Louisiana Purchase in 1804.

2 Early Louisiana Hurricane Knowledge

As mentioned above, the 'French' who experienced the 1722 hurricane had actually to a large part come to Louisiana from New France with the Iberville expedition in 1699.[7] In addition, (continental) French convicts and 'unwanted subjects' were brought to the colony between 1717 and 1719, a first shipment of African Slaves from the Ivory and Gold Coasts arrived in 1719, and German set-

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6 If not otherwise stated all translations from French and Spanish into English are by the author. Spelling in the original quotations (see respective footnotes) was left as found in the sources, i.e. often without punctuation and accents. Le Page du Pratz, Antoine Simon, *Histoire de la Louisiane* (Paris: De Bure Veuve Delaguette et Lambert, 1758), 174. "[...] il survint un phénomène qui effraya toute la province: l'effroi était d'autant plus justement fondé que personne ne pouvait en deviner la cause ni en prévoir les effets [...]."

7 In particular the tables of the first two censuses taken in 1699 and 1700 contain the category *Canadiens*; however, later censuses, even if they do not provide concentrated lists of 'Canadian' residents, still state the New France origin of individuals. Maduell, Charles R., *The Census Tables for the French Colony of Louisiana from 1699 Through 1732* (Baltimore: Genealogical Pub. Co., 1972), 1–5.

tlers were shipped to Louisiana between 1720 and 1721.[8] The 1721 census for New Orleans and its surroundings lists 239 men, 140 women, 96 children, 155 indentured servants, 514 African slaves, 51 Indian slaves, 231 horses and cattle. Excluding horses and cattle, this amounts to 1095 members of the colony in the year before the 1722 hurricane.[9] The label 'French Louisiana' is also a misnomer because as late as 1730, 90 percent of the inhabitants between the Gulf Coast and the Great Lakes were Amerindians belonging to various nations.[10] Clearly, however, the different groups of newcomers who had been shipped to the Louisiana Gulf Coast just before New Orleans's first hurricane all came from European and African geographical regions devoid of the phenomenon of hurricanes. It is hence safe to assume that on the eve of the 1722 hurricane the vast majority (if not all) of the colony's non-native inhabitants had no experience with the destructive power of those Atlantic storm systems.[11]

Yet the early 'Canadian' and French settlers who had come to Louisiana at the turn of the century had had the advantage to learn about their new environment from the indigenous peoples inhabiting the Mississippi Delta region.[12]

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8   Vidal, Cécile, and Gilles Havard, ed., *Histoire de l'Amérique Française*, revised ed. (Paris: Flammarion, 2008), 151–152; Dart, Henry P., "The First Cargo of African Slaves for Louisiana, 1718," *Louisiana Historical Quarterly* 14.2 (1931): 167; and Le Conte, René, and Glenn R. Conrad, "The Germans in Louisiana in the Eighteenth Century," *Louisiana History: The Journal of the Louisiana Historical Association* 8.1 (1967), 68.

9   Maduell, *Census Tables*, 17.

10   A summary of different nations and their traditions is given in Kunkel, Paul A., "The Indians of Louisiana, About 1700: Their Customs and Manner of Living," in *The French Experience in Louisiana*, ed. Glenn R. Conrad (Lafayette: Center for Louisiana Studies, University of Southwestern Louisiana, 1995).

11   Vidal, Cécile, "Les Autorités et les Colons Face aux Catastrophes Naturelles (Inondantions et Ouragans) en Basse-Louisiane sous le Régime Français" (Paper presented at the Conference "La Louisiane à la Dérive : Louisiana Adrift", EHESS Paris, 2005). For a more detailed study on (indigenous) environmental knowledge and the history of science of hurricanes see Rohland, Eleonora, "Hurricanes on the Gulf Coast: Environmental Knowledge and Science in Louisiana, the Caribbean, and the U.S., 1722–1900," in *Works of Nature: Global Scientific Practice during the Age of Revolutions*, ed. Daniel Rood and Patrick Manning (Pittsburgh: University of Pittsburgh Press, forthcoming 2014); and Rohland, Eleonora, "Hurricanes in New Orleans, 1718–1965: A History of Adaptation" (PhD diss., University of Bochum, 2013), part I.

12   The French were allied with the Choctaw, the Cherokee, the Alabama (including the Talapoosa and the Abihka), the Kawita, the Tunica, the Apalachee, the Houma, and the Arkansas. By the mid-eighteenth century some of those nations, such as the Tunica, had been reduced to as few as sixty warriors. Hall, Gwendolyn Midlo, *Africans in Colonial Louisiana: The Development of Afro-Creole Culture in the Eighteenth Century* (Baton Rouge: Louisiana State University Press, 1992), 19.

The French colonial sources clearly indicate that the newcomers were informed by the local indigenous peoples about the Mississippi river's flood regime and safe sites for settlement. However, the sources yielded no evidence regarding the transmission of 'hurricane knowledge' from one group to the other.[13] This stands in contrast to the situation on the West Indian Islands where during the seventeenth century the native peoples apparently had turned into hurricane forecasters for the European colonisers as was shown by Matthew Mulcahy's and Luis Perez's hurricane histories of the Caribbean.[14] The most self-evident reason for this difference in the circulation of environmental knowledge is the fact that the Caribbean archipelago is much more exposed to Atlantic hurricanes than the Gulf Coast around the Mississippi Delta.

3   Hurricane Risk and Frequency in New Orleans

Before diving into the eighteenth century hurricane chronology, a look at New Orleans's hurricane risk, as established by present-day tropical meteorologists, is in order. The city's geographical location between Lake Pontchartrain and the Mississippi makes it "more prone for hurricane disasters than any other major American city", according to Louisiana State Climatologist Barry Keim. Yet only 31 percent of the tropical cyclones that occur in the North Atlantic basin in fact enter the Gulf of Mexico.[15] In addition, New Orleans is situated fifty miles inland from the coast, so that hurricanes and tropical storms are usually weakened when they hit the city. Keim and Muller established that throughout the 157 years between 1851 and 2007, 96 tropical storms and hurri-

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13   On borrowing food from Indian nations and exploring the terrain with Indian guides see for example the journals of d'Iberville and of Sauvole in Margry, Pierre, *Découvertes et Etablissements des Francais dans l'Ouest et dans le Sud de l'Amerique Septentrionale* (*1614– 1754). Memoires et Documents Originaux. Découverte par Mer des Bouches du Mississippi et Établissments de Le Moyne d'Iberville sur Le Golfe Du Mexique* (*1694–1703*), 6 vols, vol. 4 (Paris: Maisonneuve et Cie., 1881), 98ff and 449ff, respectively.

14   Mulcahy, Matthew, *Hurricanes and Society in the British Greater Caribbean, 1624–1783* (Baltimore: Johns Hopkins University Press, 2006); Pérez, Louis A., *Winds of Change: Hurricanes and the Transformation of Nineteenth Century Cuba* (Chapel Hill: University of North Carolina Press, 2001).

15   Keim, Barry D., and Robert A. Muller, *Hurricanes of the Gulf of Mexico* (Baton Rouge: Louisiana State University Press, 2009), 131, 56.

canes threatened New Orleans, which amounts, on average, to a little over one threat every other year.[16]

For the eighteenth century, that is the time span between 1718 and 1794, I was able to establish seventeen hurricane impacts[17] for New Orleans from the French and Spanish colonial sources, as well as from a hurricane chronology tested by historical climatologist Michael Chenoweth.[18] It is important to note that Keim and Muller's data largely fall into the period of instrumental recording of meteorological events (i.e. from ca. 1850 onwards). This is not the case for the eighteenth century where we rely exclusively on written (historical) sources. I can therefore only account for hurricanes as reported in the colonial records, and not for smaller scale tropical storms which may have occurred but which were not recorded by the colonial administration.[19] It can furthermore be difficult—but not impossible—to assess hurricane strength in hindsight and with limited information from historical sources.[20] I will therefore restrict my analysis to the reported effects of hurricanes provided by the French and Spanish colonial officials.

4   Adaptation to Hurricanes in New Orleans, 1718–1794

As regards natural hazards, the first thing the French engineers who came to Louisiana recognised was of course the swampiness and the flood-proneness of the Mississippi Delta and of the New Orleans site. Flooding as well as swamps (*marais*) were familiar occurrences to them. France had a record of levee building along its rivers dating back to the Middle Ages or even to

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16   Keim, and Muller, *Hurricanes*, 132. For the hurricane strike model employed by the authors see ibid., x.

17   Unlike for the French period, my search for hurricanes in the Spanish period of New Orleans was not exhaustive; it is therefore likely that further research in the records of the Archivo General de Indias will bring to light further hurricanes that affected the city.

18   Chenoweth, "Reassessment."

19   My research is restricted to land data, that is, to sources providing information about societal impacts of hurricanes, rather than including logbooks that would provide information for the reconstruction of historical storm tracks over water.

20   See Chenoweth, Michael, "Objective Classification of Historical Tropical Cyclone Intensity," *Journal of Geophysical Research* 112 (2007): D05101, doi:10.1029/2006JD007211. It was not possible to follow Chenoweth's example for eighteenth century New Orleanian hurricanes as the French and Spanish colonial records did not yield the information required (barometric pressure, wind directions, wind force descriptions) for reconstruction and New Orleans's first newspapers only emerged at the beginning of the nineteenth century.

antiquity and Louisiana's first engineers were experts in the métier of fort and levee building.[21] So, the fact that New Orleans's future site was flooded several times a year ultimately did not outweigh its commercial and military importance, and, according to the engineers' perspective, building strong levees could prevent flooding. The first of those were being built already in 1719, only a short time after the first houses of the city had been constructed.[22]

Hurricanes were likely not part of the personal experience of many colonial officials[23]—often arriving in Louisiana from New France or continental France—and even less so of all the newly arrived settlers of Louisiana and New Orleans. Only one hurricane had hit the shore of the Gulf Coast during the French settlement period in 1715, not enough for the small number (215) of white colonists to familiarise themselves with the characteristics or the impact of such an event.[24] It has to be stressed that while the seasonality of hurricanes and the typical changing of wind directions were established knowledge at the beginning of the eighteenth century, neither the geographical range of their occurrence nor the fact that those storms move, were understood by contemporaries.[25]

The hurricane of September 12, 1722 was thus the second to affect the colony but the first for emerging New Orleans. The storm lasted for 12 hours and it

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21   On the early history of the *levée* in France see Dion, Roger, *Histoire des levées de la Loire* (Paris, 1961).

22   Clearing of the New Orleans site began in May 1718. Levees and the excavation of a drainage canal which was to connect the Mississippi and Lake Pontchartrain had been planned from the start and were executed—out of necessity—on the basis of a comparatively short knowledge of the local environmental conditions. See Giraud, *Époque*, 3, 318 and 319, and *Memoire concernant la colonie de la Louisiane* 1664 à 1731, n.d., ANF, Colonies, C¹³ C 1, Fo. 28r.

23   It is possible, however, that French colonial officials—usually drawn from the aristocracy—learned about hurricanes in the naval schools that were part of their military education. Artz, Frederick Binkerd, *The Development of Technical Education in France, 1500-1850* (Cleveland: Society for the History of Technology, 1966), 9, 11.

24   Allain, Mathé, "French Emigration Policies: Louisiana, 1699–1715," in *The French Experience in Louisiana*, ed. Glenn R. Conrad, *The Louisiana Purchase Bicentennial Series in Louisiana History* (Lafayette: Center for for Louisiana Studies, 1995), 108.

25   This becomes particularly clear considering an *early nineteenth-century* report by meteorologist William Redfield who stated in an 1831 article about a hurricane that "when accounts of hurricanes were formerly received as occurring at different islands, on various dates, with marked differences also in the direction of the wind it was taken for granted [...] that such accounts, in most cases related to different storms". Redfield, William Charles, "Hurricane of August 1831," *American Journal of Science and Arts* 21 (Oct. 1832): 191.

destroyed 34 houses, the church, the presbytery, and all the ships moored in port. In addition, the settlers also lost their entire harvest including the grains that should have been sown during the next season. Surprisingly, no casualties were reported from New Orleans, although a few of the German newcomers had apparently drowned in a nearby lake, the water level of which had risen as a result of the hurricane.[26] Throughout the French and Spanish colonial reports about hurricane impacts, these features are invariably mentioned in the aftermath of a storm—that is, the mostly only partial destruction of the built environment, the usually complete destruction of the means of transport, and the devastating effects of hurricanes on foodstuffs and cash crops such as indigo and tobacco. The destruction of ships was particularly daunting since they were the fastest and, for a long time, the only viable means of transport and communication, considering the lack of roads in the aquatic environment of New Orleans. What is more, in times of scarcity ships were used to travel to neighbouring forts or colonies in order to ask for foodstuffs and to transport those back in bulk. The complete destruction of small and seagoing watercraft meant a temporary but potentially devastating isolation of the colony from help through neighbouring settlements, as well as through the colonial centre in Paris or Havana (during the Spanish reign), respectively.

It may therefore come as no great surprise that a 'hurricane port' was suggested to be built in the aftermath of the 1722 hurricane by New Orleans engineer Adrien de Pauger. He thought it

> indispensable to build a slipway or little port, between the city and the house of Mr. de Bienville, in order to protect the pirogues[27] and ships from hurricanes which damage and destroy them by shattering them on the coast.[28]

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26   Conte and Conrad, "Germans," 79.

27   A pirogue was a larger sized boat (40 to 50 feet long with a carrying-capacity of between one and fifty tons), it was also sometimes called "canoe" (*canot*). The pirogue had seats for rowers, an oar at the stern for navigation and it could also set a sail if winds prevailed. They were easy to build and often replaced boats provided by the government, they were the principal means of transport between Lower Louisiana and the French settlement at Illinois. Miller Surrey, Nancy M., "The Commerce of Louisiana During the French Regime, 1699–1763" (Ph.D. thesis, Columbia University, 1916), 57–58.

28   De Pauger, Adrien to Directors, September 15, 1724, ANF, Colonies, C13 A 8, Fo. 8ov. Il faut aussy indispensablement faire une calle d'eschouage ou petit port, entre la ville et la maison de M. de Bienville pour garantir les pirogues et Batteaux des ouragants qui les perdent et les destruisent en les brisant contre l'ecore […].

With regard to the widespread ignorance about the hurricane threat on the Louisiana Gulf Coast, de Pauger's idea is quite remarkable. It implies that at least the engineers now regarded hurricanes as a possibly recurring risk against which certain preventative measures could be taken in order to protect valuable objects, such as ships, from damage—and the Company government of the colony from expenses. However, the directors of the *Compagnie* were not as far-sighted as the engineers; they found such a project altogether "too considerable".[29] With regard to adaptation, de Pauger's port was the only concrete, pro-active measure against hurricanes that was proposed in the (French and Spanish) administrative correspondence of the colony. Levees continued to be built as a reaction to the annual river floods rather than as protection from hurricanes. It is important to note, however, that the 1722 hurricane was also the first instance in which storm surge—in eighteenth-century terms "high water"—in the Mississippi was noted as a result of the passing storm.[30]

Apart from transport, the second, and even larger theme running like a thread to the end of the eighteenth century is food scarcity and consequent migration in the aftermath of hurricanes. This aspect connects to the subject of present-day migration and displacement in the aftermath of disasters. The impulse of eighteenth-century settlers to desert lower Louisiana and New Orleans in the aftermath of hurricanes threatened the whole colonial enterprise in that region well into the 1790s. In order to illustrate this point, I will now follow the impacts shown on figure 5.1, focusing in particular on the back-to-back events of 1732/33, 1779/80, and 1793/94.

4.1   *1732/33*

Ten years after the 1722 hurricane, on August 29, 1732, a second hurricane hit New Orleans.[31] Lieutenant de Roy Louboey, a member of New Orleans's *Conseil*

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29   Compagnie to Périer, "Mémoire de la Compagnie," ANF, Colonies, C¹³ B 1, Fo. 88v-89r.

30   Bernard Diron D'Artaguiette, inspector general for the *Compagnie des Indes* wrote in his report that "if the Mississipy had been high this hurricane would have put both banks of the river more than 15 feet under water, the Mississipy, although low, having risen 8 feet". Journal de Diron D'Artaguiette, ANF, Colonies, C¹³ C 2, Fo. 198v. "Il est a remarquer que sy le Mississipy auroit esté haut, ce houragan auroit mis les deux bords de la riviere plus de 15 pieds d'eau. Le Mississipy quoy que bas ayant monté de 8 pieds". One pied de Paris measured 32.48 cm (1.06 feet); Delsalle, *Vocabulaire*, 93. Hence the Mississippi rose by about 2.6 meters (8.48 American feet) and the banks would have overflowed by 5.1 meters (16.7 American feet).

31   In 1731, the *Compagnie des Indes* (*Compagnie d'Occident* until 1719) had just ceded Louisiana back to the French Crown as it saw itself unable to maintain the colony. Louisiana had only developed haltingly within the decade of the *Compagnie*'s reign and the
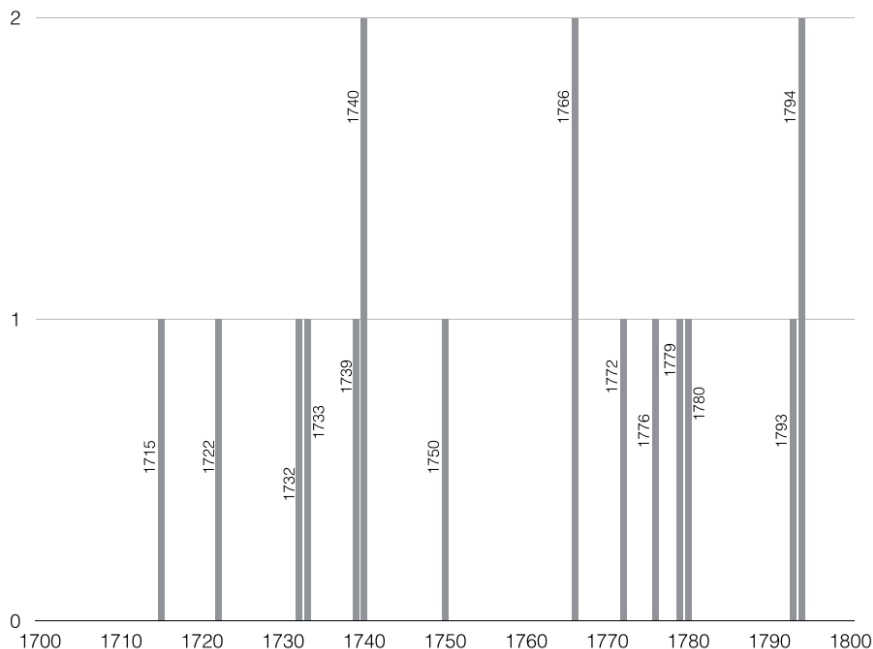
FIGURE 5.1   *Number of hurricanes impacting New Orleans, 1700–1800*

Supérieur,[32] described it as a major setback to Louisiana's development, in particular regarding the food situation:

> […] we see ourselves set back more than ever by the accidents that have happened and which were impossible to foresee. The hurricane of August 29, last, ravaged the whole harvest, overthrew the houses and destroyed three quarters of the foodstuffs, tobacco, cotton and other crops which

beginning of French-Indian conflicts in 1729 (the "Natchez Massacre") convinced the Company of the impossibility to continue governing the colony. Usner, Daniel H., *Indians, Settlers & Slaves in a Frontier Exchange Economy: The Lower Mississippi Valley before 1783*, published for the Institute of Early American History and Culture, Williamsburg, Virginia (Chapel Hill: University of North Carolina Press, 1992), 72, and 81–82.

32   The Superior Council was established in 1712 and included the Governor, the *commissaire-ordonnateur* (who had the function of comptroller of finances), the attorney general and a number of further councillors. Members were appointed by the King, often on the suggestion of the Governor. Hardy, James D. Jr., "The Superior Council in Colonial Louisiana," in *Frenchmen and French Ways in the Mississippi Valley*, ed. John Francis McDermott (Urbana: University of Illinois Press, 1969), 87–89.

put the settlers in the saddest situation of the world and three quarters
would have perished of hunger had there not been some three or four
thousand quarts of rice in the stores of the Company, the distribution of
which saved the population from a famine.[33]

Apparently, the 3000 settlers living in and around New Orleans in 1732 would
have died of hunger had it not been for the rice stored in the city's warehouse.[34]
It is important to briefly put Louboey's report into the context of early Louisi-
ana's food economy. The colony was still not self-sufficient in its food supply in
the 1730s; it depended on the irregular shipments of provisions from France
and on wheat flour from the French Illinois settlement.[35] The flour shipments
from the north were equally irregular due to climatic as well as human factors.
That is, the banks of the Mississippi were peopled by many Indian nations, not
all of which were allied to the French. The down-river journey was hence a
precarious undertaking. Furthermore, rice had been cultivated in the coastal
area of the Mississippi Delta since the arrival of the first African slaves in 1719,
yet even good yields were often incapable of fully relieving the hardship that
frequently arose from delayed supplies from France as well as the Illinois coun-
try.[36] Self-sufficiency of the colony was not attained during the French reign of
Louisiana, that is, the situation described above persisted through 1762.

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33   Louboey to Minister, January 28, 1733, HNOC, ANOM, Colonies, C13 A 17, Fo. 218v–219r.
      [...] nous nous voyons plus reculés que jamais par les accidens qui sont survenus et
      qu'il etoit impossible de prevoir; L'ouragan du 29eme d'aoust dernier a ravagé toutes
      les recoltes renversé les maisons et fait perir les trois quarts des vivres, tabacs, cottons
      et autres Denrees ce qui a mis les habitans dans la situation du monde la plus triste et
      les trois quarts auroient peris de faim s'il ne s'etoit trouvé trois ou quatre milles quarts
      de ris dans les magazins de la Compagnie dont la repartition a sauvé le peuple d'une
      famine [...].

34   The 1727 census for New Orleans and its environs (not including Biloxi and Mobile, but
      including New Orleans proper, the settlements along the Mississippi from its mouth to
      Pointe Coupee, Gentilly (Chantilly) and Bayou St. John) counts 1327 *habitants* (French
      and German), 133 *engangés* (indentured servants), 1561 African slaves and 75 Indian
      slaves, that is 3096 individuals, in all. See Maduell, *Census Tables*, 81. The Indian popula-
      tion of French colonial Louisiana and Illinois in 1730 was estimated at 59,000. Pritchard,
      James S., *In Search of Empire: The French in the Americas, 1670–1730* (New York: Cambridge
      University Press, 2004), Appendix I., 423.

35   Cécile Vidal, "Antoine Bienvenu, Illinois Planter and Mississippi Trader: The Structure of
      Exchange Between Lower and Upper Louisiana Under French Rule," in *Colonial Louisiana
      and the Atlantic World*, ed. Bradley G. Bond (Baton Rouge: Louisiana State University
      Press, 2005), 111.

36   Usner, *Indians*, 207.

The colony was granted no break from its troubled food situation. New Orleans and its environs were still reeling from the effects of the hurricane, when a drought in April and May "dried out the earth in such a way that it was hardly possible to work the soil". This was followed by two months of extreme rainfall, which was still on-going when Governor Bienville reported these occurrences to the Minister of the Marine in France. On July 17, 1733, a second storm hit New Orleans, destroying the little that had grown after the impact of the past year. The rice was apparently, however, hardly affected and again proved to be "the salvation of the Colony".[37] After this second hurricane within the time span of eleven months, however, the settlers were in a much more desperate situation, as Governor Bienville wrote to the Minister of the Marine: "if we had not still had 3000 quarts of rice in the ware houses of the Company which Sieur Salmon distributed with the greatest economy possible, we would have had a complete desertion."[38] While back migration to France was common even under 'normal' (i.e. non-disaster) circumstances, it was noted in particular after hurricane disasters.[39] Large numbers of settlers and soldiers were needed, however, in order to maintain and fulfil the commercial as well as the military goal of Louisiana—yielding agricultural products for France (and later Spain) and, at least initially, controlling the Mississippi River from the Great Lakes down to the Gulf of Mexico.

4.2   1779/80

I will fast forward on the timeline in figure 5.1 to the hurricanes of 1779 and 1780. Figure 5.1 shows that the intervening decades brought several further back-to-back as well as single hurricanes that caused food scarcity and price inflation in New Orleans and its environs, hampering its development. The colony's run-down appearance was noted by the new Spanish rulers who took over the colony in 1766, after its cession at the end of the Seven Years' War in

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37   Salmon to Minister, August 1, 1733, HTML ANF, Colonies, C¹³ A 17, Fo. 183r.

38   Bienville to Minister, August 5, 1733, HNOC ANF, Colonies, C¹³ A 16, Fo. 142r. "[…] et si nous n'avions pas eu encore dans les magasins de la Conpagnie 3000 quarts de ris que le Sieur Salmon a distribué avec la plus grande oeconomie qu'il luy a esté possible, nous aurions eu une desertion complète."

39   Vidal, and Havard, *Amérique Française*, 206; Pritchard, James, "Population in French America, 1670–1730: The Demographic Context of Colonial Louisiana," in *French Colonial Louisiana and the Atlantic World*, ed. Bradley G. Bond (Baton Rouge: Louisiana State University Press, 2005), 198; see also Mouhot, Jean-Francois, *Les Réfugiés Acadiens en France, 1758–1785: L'Impossible Réintegration?* (Québec: Septentrion, 2010).

1762.[40] The changing of hands of Louisiana is not only interesting with regard to military and diplomatic history but in particular with regard to environmental knowledge. While the Spaniards had a long record of hurricane knowledge from the islands of Cuba and Hispaniola, they were newcomers to the Mississippi Delta and its wetlands and had yet to experience the effects of hurricanes on this particular coastline of the Gulf of Mexico.

A decade into the Spanish reign of Louisiana, the 1779 and 1780 hurricanes coincided with Spain's entering the American War of Independence against Britain. The hurricanes also coincided with the influx of a large number of soldiers and their families (1592 people) who were recruited from the Canary Islands, primarily as reinforcement for the Spanish troops but also to settle in lower Louisiana permanently.[41] The new soldiers and inhabitants of the colony were brought to New Orleans between 1778 and 1780 and were settled in sites selected primarily to safeguard New Orleans against an enemy invasion coming through the Mississippi river. Two of the selected sites, San Bernardo (today St. Bernard) and Barataria, were particularly prone to flooding through storm surge, which became painfully apparent throughout the first two years of the settlement scheme, coinciding with the two hurricanes.

Two days after the 1779 hurricane had left New Orleans in ruins, Governor Bernardo de Gálvez wrote to the Captain General of Cuba, Diego José Navarro. He described the cyclone as "so terrible, there is no memory [of a similar calamity] in this colony".[42] As in the previous cases, small as well as seagoing watercraft was destroyed, which was particularly daunting in the face of a planned coup against the British to win back the settlements upriver from New Orleans.[43] Gálvez' letter continued:

> The city is the most deplorable spectacle ever seen. There is hardly a
> house which wasn't destroyed, and many are ruined and damaged, the
> fields razed, the surrounding plantations, which were the only ones from

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40   The de facto beginning of Spanish rule was only in 1769, after Lieutenant General Alejandro O'Reilly had quelled the revolt of the French Louisianans against the new rigidly mercantilist Spanish regime. See Moore, John Preston, *Revolt in Louisiana: The Spanish Occupation, 1766–1770* (Baton Rouge: Louisiana State University Press, 1976).

41   Din, Gilbert C., "The Canary Islander Settlements of Spanish Louisiana: An Overview," *Louisiana History: The Journal of the Louisiana Historical Association* 27.4 (1986): 355.

42   Gálvez to Navarro, August 19, 1779, HNOC AGI, Papeles de Cuba, Leg. 1232, Ed. 145, Reel 6, Doc. 202, Fo. 659r. "tengo el sentim.to de comnunicar a V.S. haberse experimentado un uracan tan terrible, qual no hay memoria en esta Colonia."

43   Chávez, Thomas E., *Spain and the Independence of the United States: An Intrinsic Gift* (Albuquerque: University of New Mexico Press, 2002), 170.

which I could get notice until now, are all downed. In one word: harvest,
livestock and stores are all lost.[44]

Added to the destruction of all foodstuffs was the insecurity about the fate of
the *Volante*, a provisioning boat on its way to the colony, which had on board
60,000 pesos as well as 200 barrels of flour. The latter was urgently needed in
New Orleans, as the hurricane had carried away the roof of the royal store-
house and the rain had spoilt large parts of the stored flour.[45] A general food
crisis was thus imminent for all parts of the population. Apart from lacking
provisions and boats for his military campaign against the British, Gálvez also
saw himself forced to desist from his plans because the newly arrived "Isleños"
(the Canary Islanders), traumatised by this hurricane experience, could hardly
be persuaded to go to war with him.

> I think they would rather allow themselves to be killed than be separated
> from their unfortunate parents, wives, children and sisters, abandoned to
> pain and inclemency in the middle of the fields.[46]

Apparently, Gálvez managed to change the soldiers' minds, for, on August 27
the Governor, with a battalion of 649 men of various nations, marched up the
Mississippi to free the upriver settlements.

New Orleans was granted no respite and the new settlers' negative image of
Louisiana was exacerbated after another hurricane affected the city in the fol-
lowing year. The tropical cyclone made landfall on August 24, 1780, and was felt
from half past eleven in the morning until three a.m. of August 25. The violent
winds destroyed the city's wooden houses and sent flying the debris so that
"the air was obscured by fragments of houses".[47] As in the year before, the
ships in the river were broken to pieces and ten people died because of the
storm.[48] Louisiana's Intendant, Martín Navarro, surmised that it would cost
more than 600,000 pesos to rebuild the city after its destruction by the hurri-
cane. In a letter to the Captain General in Cuba—his relative Diego José Na-
varro—the Intendant wrote that

44   Gálvez to Navarro, August 19, 1779, HNOC AGI, Papeles de Cuba, Leg. 1232, Ed. 145, Reel 6,
      Doc. 202, Fo. 659v.

45   Gálvez to Navarro, August 19, 1779, HNOC AGI, Papeles de Cuba, Leg. 1232, Ed. 145, Reel 6,
      Doc. 202, Fo. 660r.

46   Ibid., Fo. 659v.

47   Navarro to Gálvez, August 29, 1780, HNOC, AGI, Papeles de Cuba, Leg. 593, Ed. 87, Reel 107,
      Fo. 53v.

48   Ibid., Fo. 54v.

the slowdown which this disaster occasioned […] and the lingering suspicion that it could be repeated during the current year is a great obstruction to [the colony's] development.[49]

Navarro was particularly worried with regard to the newly arrived Canary Islanders and their families, who had been brought to Louisiana to support the war effort, but also to advance Louisiana's commercial agriculture. His letter to the Captain General continued:

For, seeing these settlers taking the plague of the hurricane as periodical and thinking in nothing less than absenting themselves, as soon as they experienced this new loss, all unanimously voiced the intention of selling the little they have left—provided there are buyers—in order to establish themselves in another place. This fermentation of emigration in their minds obliges me to write the circular which I am including to you […].[50]

Navarro's account indicates that the Canary Islanders thought the hurricanes they had experienced in the first two years of their residence in Louisiana would be repeated annually. After seeing their possessions destroyed twice in short succession they hence strove to move to a less catastrophe-ridden place than the Gulf Coast. That this, "fermentation of emigration" in the minds of settlers still put the colonial enterprise at jeopardy as late as the 1780s becomes clear from Navarro's advice to the Captain General, that, "if His Majesty wants to suppress the emigration of those peoples, if a barrier should be made of this country and if it is to flourish in armament as well as cultivation," it was necessary for King Charles III to grant free trade "to whichever nation wanting to undertake it".[51] In other words, man and woman power was needed to make the colony flourish economically but also in order to defend it against enemies. However, its subsistence could only be guaranteed by the labour of many hands, and—as Navarro implied—by the freeing of Spain's rigidly mercantilist trade regulations. Those regulations bore especially hard on disaster-stricken

49   Navarro to Galvez, August 29, 1780, HNOC, AGI, Papeles de Cuba, Leg. 593, Ed. 87, Reel 107, Fo. 55v.

50   Navarro to Gálvez, August 29, 1780, HNOC AGI, Papeles de Cuba, Leg. 593, Ed. 87, Reel 107, Fo. 58r–58v.
       […] viendo estos Havitantes como periodico el Azote del Uracan, en nada menos piensan que en ausentarse apenas acavaron de experimentar esta nueva perdida todos a una voz piensan vender lo poco que les ha quedado si hallasen compradores para establezerse en otro parage. Esta fermentacion de emigracion que havia en los espiritus me obligo a hazer imprimir la carta circular que incluyo a V.E […].

51   Navarro to Gálvez, August 29, 1780, HNOC AGI, Papeles de Cuba, Leg. 593, Ed. 87, Reel 107, Fo. 56r.

colonials as they could not legally trade for urgently needed foodstuffs with foreign nations, and thus exacerbated the nutritional situation.[52] It is hence likely that the threatening emigration of a part of the population and its economic consequences were also used to exert pressure on the colonial government in Havana and on King Charles III to change their policy.

4.3   1793/94

In August 1793, another 14 years forward on the timeline in figure 5.1, a hurricane hit New Orleans on "the same day on which 14 years before the violent one of 1779 occurred", that is on August 18. It devastated an area of 77 leagues (321.8 km) "from the mouth of the Mississippi River upwards", and as in the previous cases, it destroyed all boats moored in front of the city.[53] This hurricane was followed by two further cyclones, both within 21 days of each other, in August of 1794.

In a letter to the Captain General of Louisiana, Luis de las Casas, Louisiana's then Governor Carondelet only gave an account of the hurricane of August 10, 1794, as the second hurricane was to make landfall on the day he wrote his letter, on August 31. Apparently, the effects of the August 10 hurricane had been more devastating than those of the year before. The storm was felt for nine hours and as far up as Baton Rouge. At the time of writing the Governor had no news of whether the hurricane might have impacted the colony as far upriver as Natchez.[54] The cyclone had wrought destruction in New Orleans's surroundings, but the city was not spared, either. The water had risen to six feet and had flooded the city from the back, through Lake Pontchartrain. It "covered the whole ground and came with terrible velocity to mix with [the waters] of the Mississippi, sweeping up trees, houses, cattle—alas, everything they encountered".[55]

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52   Sherry Johnson, *Climate and Catastrophe in Cuba and the Atlantic World in the Age of Revolution*, Envisioning Cuba (Chapel Hill: University of North Carolina Press, 2011), 104–147.

53   Carondelet to Aranda, n.d. [1793], HNOC, AGI, Papeles de Cuba, Leg. 178, Ed. 144, Reel 166, Doc. 92. "[…] el huracan que ha sufrido esta provincia el 18 de Agosto en el mismo dia que se cumplían 14 anos del violento de 1779, en el dilatado espacio de mas de setenta y siete leguas desde las bocas del Misisipi arriba."

54   De las Casas to Campo de Alange, September 15, 1794, [copy of: Carondelet to de las Casas, August 31, 1794], HNOC, AGI, Audiencia de Santo Domingo, Leg. 2643, ind. 845, Fo. 598r.

55   De las Casas to Campo de Alange, September 15, 1794, [copy of: Carondelet to de las Casas, August 31, 1794], HNOC, AGI, Audiencia de Santo Domingo, Leg. 2643, ind. 845, Fo. [599r].
       [...] todos los habitantes de esta capital hasta Placaminas espantados de los horrorosos estragos de las aguas del Mar, que subiendo por detras de sus habitaciones, a mas de seis pies de altura, cubieron toda la tierra y vinieron con un impetu terrible a con-

As regards New Orleans's food situation, and economic infrastructure, Governor Carondelet wrote in his letter that the inhabitants of the coastal marshes below the city had deserted this formerly productive rice-growing area to an extension of ten leagues inland. The Governor saw this disaster migration[56] as a great loss for a region which depended on rice as a subsistence crop. He estimated that the total damage wrought by the hurricane would cost the royal treasury some 12,000 pesos. To this sum Carondelet added 3000 pesos of disaster relief to help the rice-growing population below New Orleans to return to their devastated coastal properties.[57] Apart from the rice, the indigo and maize crops had also suffered in the hurricane so that neither subsistence nor cash crops could be marketed in New Orleans. Nor could emergency provisions be sought easily at neighbouring ports with most watercraft destroyed or badly damaged. Predictably, the vicious circle of price inflation as a consequence of food scarcity set in, which in turn, further exacerbated the subsistence crisis in and around New Orleans.[58] Many farmers had become so destitute and deprived of their livelihoods after the three hurricanes of 1793/94 that Intendant Rendon started distributing alms in order for them to survive.[59]

However, New Orleans's ordeal was not over after the second hurricane of 1794 had dissipated on September 1. Three months later, on December 8, a fire broke out and burned down a third of the city within three hours, including the storehouses containing provisions. It was the second city fire to affect New Orleans within six years, the last having occurred on Good Friday of 1788. 300 families were rendered homeless by the conflagration and had "fled to the

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fundirse con las del Misisipi, arrastrando consigo arboles, casas, ganadobacuno [ganadovacuno], en fin todo quanto encontraban [...].

56   Disaster migration describes the process of permanent migration in the aftermath of a disaster. While forced migration and displacement are well-researched subjects in migration history, the study of disaster migration has only just emerged as a research topic. See Mauelshagen, Franz, and Uwe Lübken, "Climates of Migration: A Research Project on the Historical Intersections of Climate Change and Migration," accessed January 20, 2015. http://climatesofmigration.org/about/. Anthony Oliver-Smith first used the term "disaster migration" in an article on Hurricane Katrina, see Oliver-Smith, Anthony, "Disasters and Forced Migration in the 21st Century," published June 11, 2006, accessed January 18, 2015. http://understandingkatrina.ssrc.org/Oliver-Smith/.

57   De las Casas to Campo de Alange, September 15, 1794, [copy of: Carondelet to de las Casas, August 31, 1794], HNOC, AGI, Audiencia de Santo Domingo, Leg. 2643, ind. 845, Fo. [599v].

58   Rendon to Alcudia, September 16, 1794, HNOC, AGI, Papeles de Cuba, Leg. 638, Ed. 141, Reel 6, Doc. 1.

59   Rendon to Alcudia, n.d. [December 1794], HNOC, AGI, Papeles de Cuba, Leg. 638, Ed. 141, Reel 6, Doc. 3.

fields or to the houses of friends and relatives".[60] Although Governor Caronde-
let and Intendant Rendon had sent ships to Havana, Vera Cruz and Charles-
town for emergency provisions, they saw the city in imminent danger of a
famine as well as a surprise attack by enemies. Skirmishes by enemies were
thought possible through the effects which the French Revolution had in the
Caribbean, especially in France's most important colony, Saint Domingue (the
western part of Hispaniola). There, African slaves had started rebelling against
colonial rule in 1791. The interests of the white planter élite on Saint Domingue
were by no means congruent with those of the metropolitan élite of continen-
tal France. The declaration of the Rights of Man and Citizen, which was to ap-
ply uniformly in all French territories, effectively dissolved the economic and
social structures of the colony, which were built on the system of slavery.[61]
Hence, white and free coloured planters tried to refuse the implementation of
those rights for African slaves. Yet, in February 1794, the Directory in Paris de-
clared the abolition of slavery in all French territories and the extension of full
citizenship to African born slaves. This legislation together with the rise to
power of the slave leader Toussaint Louverture caused the first waves of white
planters to leave the island for France, Spanish Cuba, British Jamaica, the Unit-
ed States east coast, and some for Spanish Louisiana.[62]

It is in this wider socio-political context that the hurricane and fire disasters
of 1793/94 occurred in New Orleans. A letter of the city's attorney general to the
Cabildo, the Spanish city council, summarises the depressed atmosphere in
New Orleans after the consecutive disaster impacts. It also stresses the prob-
lem of post-disaster migration that was apparently threatening the city and its
environs. Attorney general Labatut wrote on behalf of the inhabitants and
reported that they were "stricken with horror" by the December 1794 fire and
that it

60   Rendon to Alcudia, n.d. [December 1794], HNOC, AGI, Papeles de Cuba, Leg. 638, Ed. 141,
      Reel 6, Doc. 3.

61   Popkin, Jeremy D., "The French Revolution's Other Island," in *The World of the Haitian
      Revolution*, ed. David Patrick Geggus and Norman Fiering (Bloomington: Indiana Univer-
      sity Press, 2009), 200–201.

62   Fick, Carolyn E., "The Saint-Domingue Slave Revolution and the Unfolding of Indepen-
      dence, 1791–1804," in *The World of the Haitian Revolution*, ed. David Patrick Geggus and
      Norman Fiering (Bloomington: Indiana University Press, 2009), 178. Larger and controver-
      sially received migration movements from Saint Domingue to New Orleans occurred dur-
      ing the period of Louisiana's Americanisation, after the Louisiana Purchase in 1803/1804,
      and again, in 1809/1810. See Dessens, Nathalie, "From Saint Domingue to Louisiana: West
      Indian Refugees in the Lower Mississippi Region," in *French Colonial Louisiana and the
      Atlantic World*, ed. Bradley G. Bond (Baton Rouge: Lousiana State University Press, 2005),
      249.

added to the many calamities which they have endured since the year of 1779 up to the present year during which time we experienced five hurricanes, many floods and two great fires which have successively destroyed the greatest part of the crops and almost all commercial and industrial products [...]. Besides having all resources exhausted by so many calamities, the fear of other similar misfortunes depresses the strongest spirits in starting anew to develop enterprises exposed to certain ruin. If this way of thinking (solely based on our misfortunes) is propagated, the emigration of several useful residents must be expected, who will go to work in other countries less exposed to so detrimental risks now desolating our own, and these same misfortunes will keep away others from coming to establish themselves here, the population will decrease instead of increasing, which is needed for the development of the agriculture, commerce and all other productive enterprises, the products of which will drop in proportion with the decrease in population.[63]

In order to help the colony's economy back on its feet and in order to raise the spirits of New Orleans's stricken inhabitants, Labatut suggested that "the powerful hand of our august kind Monarch", Charles IV of Spain, loan the colony one million pesos for the owners of the burnt down properties to rebuild their houses. The attorney general furthermore proposed that fire-safe building materials be used for the new houses.[64] This difference in the treatment of wind and fire disasters in New Orleans is significant. While Labatut provided clear directives regarding building materials in the aftermath of the conflagration, no such suggestions were made after the hurricane events, as wind was not seen as an element under human control. Fire as a human tool, on the other hand, had always been part of civilisation and means of fire risk-reduction had coevolved with it—though without eradicating the risk of large city conflagrations.[65] The different perception of these two hazards is reflected in today's categorisation of fire as a 'human-made', rather than a 'natural' disaster.[66]

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63   Pedro Pedesclaux, December 19, 1794, NOPL, Acts and Deliberations of the Cabildo. May 25, 1792-April 10, 1795, AB 301 1779–1795, Vol. 3 No. 3, Fo. 180.

64   Pedro Pedesclaux, December 19, 1794, NOPL, Acts and Deliberations of the Cabildo. May 25, 1792-April 10, 1795, AB 301 1779–1795, Vol. 3 No. 3, Fo. 180.

65   On fire and society see Pyne, Stephen J., *Fire: A Brief History* (London: The British Museum Press, 2001); and Pyne, Stephen J., *World Fire: The Culture of Fire on Earth* (Seattle: University of Washington Press, 1998).

66   On the ambivalence of fire as a 'natural' hazard see Rohland, Eleonora, *Sharing the Risk. Fire, Climate and Disaster: Swiss Re 1864–1906* (Lancaster: Crucible Books, 2011), 56–59.

Returning to disaster migration and Labatut's warning that the consecutive disasters might cause people to leave New Orleans and might prevent new settlers from coming to the colony, was there an objective basis to his claim of depopulation? In historical hindsight, the 1790s were a decade during which population growth did indeed stall momentarily in Louisiana. According to Paul LaChance's study on Louisiana's demographics during the 1790s, this was mostly due to the decline of the slave population. While the colony's population had grown at an annual rate of 5.7 percent between 1766 and 1788, it dropped to a low of between 0.7 and 1.8 percent between 1788 and 1803.[67] New Orleans's population grew from 5020 in 1785 to 8056 inhabitants in 1803.[68] Hence, from the point of view of the local colonial government, the impression of economic setback and stalling growth was not unfounded. The consecutive floods, fires and hurricane disasters that affected the colony between 1779 and 1794, exacerbated this image. Yet, at the same time, the argument of depopulation may again have been used to underline the urgency of the situation in Louisiana to King Charles IV, in order to elicit the one million pesos disaster relief money from the royal treasury.[69]

Conclusively, Labatut's letter shows the delicate balance on which the existence of New Orleans, and with the capital city the colony of Louisiana, rested even after eighty years of its existence. The argument that immigrants would shun a colony for fear of disasters and thus hamper its flourishing lived on not only in Louisiana but elsewhere in the United States. It reappears, for example, in the Earthquake and Fire of San Francisco of 1906, when city officials tried to suppress news about the earthquake and styled the disaster as a city fire, so as not to scare off immigrants.[70]

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67   LaChance, Paul, "The Louisiana Purchase in the Demographic Perspective of its Time," in *Empires of the Imagination: Transatlantic Histories of the Louisiana Purchase*, ed. Peter J. Kastor and François Weil (Charlottesville: University of Virginia Press, 2009), 154. Governor Carondelet stopped the slave trade with the French Caribbean in 1792 for fear of importing revolutionary ideas. Holmes, Jack D.L., "The Abortive Slave Revolt at Pointe Coupée, Louisiana, 1795," *Louisiana History: The Journal of the Louisiana Historical Association* 11.4 (1970): 357.

68   Anonymous, M., *Mémoires sur la Louisiane et la Nouvelle Orléans* (Paris: Ballard, 1804), 135, 138.

69   Pedro Pedesclaux, December 19, 1794, NOPL, Acts and Deliberations of the Cabildo. May 25, 1792–April 10, 1795, AB 301 1779–1795, Vol. 3 No. 3, Fo. 182.

70   Geschwind, Carl-Henry, *California Earthquakes: Science, Risk, and the Politics of Hazard Mitigation* (Baltimore: Johns Hopkins University Press, 2001), 21, and Fradkin, Philip L., *The Great Earthquake and Firestorms of 1906: How San Francisco Nearly Destroyed Itself* (Berkeley: University of California Press, 2005), 232.

5 Conclusion

As mentioned at the beginning of this chapter, apart from engineer de Pauger's proposed hurricane port, no structural adaptation to hurricanes was suggested by colonial officials throughout the eighteenth century; nor could any ordinances requiring a changing of building materials, nor levee ordinances that referred to hurricane flooding, be found. The levees above and below New Orleans developed according to the technology imported by the French engineers and with regard to river floods rather than storm surge. As I have pointed out, the effects of storm-surge in the Mississippi were noted as early as the 1722 hurricane.

The different trajectory of flood and hurricane-related adaptation practices may best be explained by focusing on the hazard itself, on its return frequency as well as on New Orleans's urban development over time. Hurricanes have been—and in some ways still are—hard to grasp meteorological phenomena and, like earthquakes, cannot be prevented or mitigated by humans. The inundation caused by them, on the other hand, was perceived as manageable with the same measures as for fighting river floods. Part of the risk of living with the hurricane hazard is the unpredictability of its return frequency. River floods are far more predictable and therefore manageable. Hence, and because waterways have been central to human civilisation, humans have adapted to the flood hazard by constructing levee systems to fend off the waters. New Orleans's first levee system explicitly against hurricane storm surge was built after Hurricane Betsy in 1965. Not coincidentally, the early 1960s were also the time when population figures peaked at 627,525.[71] In other words, the historical growth of the city and the accumulation of valuable property and infrastructure are directly connected to the adaptive practice of building hurricane levees around New Orleans.

Furthermore, the importance of the connection between environmental knowledge and migration which ultimately also affects the memory of disasters has emerged from the three case studies. All of them have shown that hurricane disasters in New Orleans could trigger emigration of large enough parts of the population so as to set back or threaten the development of the whole colony right up to the nineteenth century. This historical fact is reminiscent of the notion of abandoning New Orleans after Hurricane Katrina in 2005, as

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71   United States Census Bureau, "1960 Census. Vol. 1, Part A 1–57: Characteristics of the Population, Louisiana, Table D 1," accessed February 20, 2014. http://www.census.gov/population/www/censusdata/hiscendata.html, 20/494; see also Campanella, *Dilemma*, graph insert.

proclaimed by Republican House of Representatives speaker Dennis Hastert; or of the post-Katrina difficulty of getting enough people to return to the city, to augment New Orleans's tax-base so that the city's services and infrastructure could be maintained.[72]

With regard to *immigration* and hurricane knowledge, particularly the 1779/80 hurricanes have shown how strategic interests—placing 'environmentally inexperienced' newcomers as a 'buffer' against enemy invaders into a high risk-zone—were often blind to local environmental realities. The new settlers who had not yet formed social or economic ties to their new, apparently disaster-prone home, had the option of moving to the vast and safer hinterlands upriver from New Orleans. Clearly, this option was detrimental not only for the economic and military advancement of New Orleans and Louisiana but also for the social cohesion of the city. The latter is an important factor with regard to disaster resilience, as the post-Katrina research by Craig Colten et al. shows.[73] Given the circumstance of the early colonial period in Louisiana, disaster migration clearly was a form of non-adaptation and a sign of non-adaptedness to the local environment.

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72   Dennis Hastert (in office until 2007) had publicly stated as early as September 1, 2005, that "it [made] no sense to spend billions of dollars to rebuild a city that's seven feet under sea level". Babington, Charles, "Hastert Tries Damage Control After Remarks Hit a Nerve," *Washington Post*, September 3, 2005, accessed June 18, 2013. http://www.washingtonpost.com/wp-dyn/content/article/2005/09/02/AR2005090202156.html.

73   Colten, Craig E., Robert W. Kates, and Shirley B. Laska, "Three Years after Katrina: Lessons for Community Resilience," *Environment* 50.5 (2008): 36–47; Colten, Craig E., and Amy R. Sumpter, "Social Memory and Resilience in New Orleans," *Natural Hazards* 48.3 (2009): 355–364.

The Landscapes of *Man:* Ecological and Cultural Change before Hurricane Katrina

Demetrius L. Eudell

Abstract

This essay uses the event that was Hurricane Katrina as its endpoint for an analysis of the history of ecological and socio-cultural change in Louisiana. After displacing and transforming Indigenous societies, European settlers had to decide how to establish a different kind of community in such a precarious landscape. This essay argues that a particular understanding not only of the environment but also a conception of Being Human, that of secular *Man* (if initially only partially so), remained equally relevant. Within the logic of this self/social understanding, a system of levees to address hurricane and storm surge, would be implemented—initially with convict and slave labour, and after the US Civil War, with poorly-compensated (i.e. 'cheap'), predominantly Black labour. The cultural and environmental questions that emerged in the wake of Katrina should compel a rethinking of the viability of contemporary approaches to organising complex technological societies, and especially, as it relates to the faith in ever-increasing economic growth.

1   *Man*, Its Others and Environmental Change

> The earth belongs always to the living generation. They may manage it then, and what proceeds from it, as they please, during their usufruct. They are masters too of their own persons, and consequently may govern them as they please.
>
> — THOMAS JEFFERSON, "Letter to James Madison"[1]

Human influence has been detected in the warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate

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1 Thomas Jefferson to James Madison, 6 September 1789 in Jefferson, Thomas, *Writings*, ed. Merrill D. Peterson (New York: The Library of America, 1984), 963.

extremes. [...] It is extremely likely that the human influence has been the dominant cause of the observed warming since the mid-20th century.

— IPCC, 2013 "Summary for Policymakers"[2]

Taking a relatively short chronological sample within a restricted geographical area—European culture since the sixteenth century—one can be certain that *Man* is a recent invention within it. [...] And that appearance was not the liberation of an old anxiety, the transition into luminous consciousness of an age-old concern, the entry into objectivity of something that had long remained trapped within beliefs and philosophies: it was the effect of a change in the fundamental arrangements of knowledge.

— MICHEL FOUCAULT, *The Order of Things*[3]

In consequence, where the Other to the *True Christian Self* of medieval Europe had been the *Untrue Christan Self* (with the external Others being *Idolaters* and/or *Infidels*), with the invention of *Man* in two forms (one during the Renaissance in the context of the intellectual revolution of civic humanism, the other in the context of that of Liberal or economic humanism which took place at the end of the eighteenth and during the nineteenth century), Europe was to invent the Other to *Man* in two parallel forms. And, because *Man* was now posited as a supracultural universal, its Other had logically to be defined as the Human Other.

— SYLVIA WYNTER, "Towards the Sociogenic Principle"[4]

The event that was Hurricane Katrina lends itself to the posing of some fundamental questions, not only with respect to the infrastructure of US society, but also regarding the organisation and priorities of our contemporary global society. Indeed, given the tremendous impact of Hurricane Katrina, it can be useful to employ the moment to reflect upon the historical origins and the

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2 Intergovernmental Panel on Climate Change (IPPC), "Summary for Policy Makers," in *Climate Change 2013: The Physical Basis: Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. Thomas F. Stocker et al. (Cambridge: Cambridge University Press, 2013), 17.

3 Foucault, Michel, *The Order of Things: An Archaeology of the Human Sciences* (New York: Vintage, 1973), 386–387. Emphasis added.

4 Wynter, Sylvia, "Towards the Sociogenic Principle: Fanon, Identity, the Puzzle of Conscious Experience, and What It is Like to Be 'Black'," in *National Identities and Sociopolitcal Changes in Latin America*, ed. Mercedes F. Durán-Cogan and Antonio Gómez-Moriana (New York: Routledge, 2001), 43.

implications of the storm. As such a heuristic device, issues related both specifically to New Orleans and the Gulf region and, more widely, to current and urgent concerns of climate and social change, can be raised.

The title of this essay alludes to Ted Steinberg's analysis of the climatic effects of the urban development in South Florida. To explain the transformation of Miami Beach from a low ridge of dunes and dense swamp of red mangroves into a tropical tourist paradise, Steinberg employed the term *manscape* to emphasise the political forces (that is, of economically powerful men, such as magnates Carl Fisher and Henry Flagler) that helped to create a high-risk environment in South Florida, where 36 percent of all hurricanes make landfall. For instance, in the early twentieth century, not only did Fisher bulkhead and pave over the swamp at Miami Beach, but he had artificial islands created in the middle of Biscayne Bay. Such developments led to a considerable increase in high-density urbanisation and in tourism, and while they generated enormous profits, especially for real estate developers, this growth also became, according to Steinberg, central to creating the "unnatural history of natural disaster", which consequently in the event of extreme weather can create a "deathscape".[5]

The *manscapes* created by this kind of urban development can also be characterised as a logical and systemic consequence of our present global civilisation's particular relation(s) to nature. Indeed, such stems not only from the understanding of the natural world, but equally from the specific conception of ourselves as human. Although forces and processes of nature exist beyond direct human control, there is nonetheless no single interpretation of nature that can be removed from a cultural representation of it, an understanding which then motivates an ensemble of behaviours that produce and reproduce human societies. In other words, the social and the symbolic remain inextricably linked. The interpretation of nature that in a large measure determines that the contemporary relation with the planetary environment is generated from the governing topos of *Man*—encapsulated in Jefferson's contention that as masters of our own persons, each generation can justifiably manage the proceeds from the earth as they please. This understanding of what it means to *Be Human* was based in part on Enlightenment notions of reason—which, then recently liberated from dominance of the organised Church and the centralised State (if nonetheless gradually and partially), became fully autonomous, self-authorising, self-governing and, though unacknowledged, transcendental.

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5 Steinberg, Ted, "Do-It-Yourself Deathscape: The Unnatural History of Natural Disaster in South Florida," in *Environmental History and the American South: A Reader*, ed. Paul S. Sutter and Christopher J. Manganiello (Athens: University of Georgia Press, 2009), 401–405.

However widespread, and seemingly impermeable to philosophical attack and to change, *Man* is nevertheless a *conception*; and, as the epigraphs from Foucault and Wynter suggest, one that in its first iteration emerged at a particular historical moment and within the frame of a particular culture, that is, toward the end of the Middle Ages in the secularising field of thought of Judaeo-Christianity.

Wynter noted that the first variant of *Man* appeared in the wake of the intellectual movement of lay humanism, which eventually led to the displacement of the hegemony of Scholasticism. The *studia humanitatis* shifted the gaze, albeit not completely, from the supernatural/theological to the natural realm. In so doing, the 'sacred letters' and scripture that had previously defined the scholastic *episteme* (to borrow Foucault's formulation) would be reoccupied by a new order of knowledge whose objects of inquiry (language, grammar, rhetoric) reflected a prioritisation of the study of things human over the formerly hegemonic study of things divine.

Nature, in this context, would take on a particular meaning. In other fields of study, such as politics, where the Platonic and Aristotelian *politeia* would be reconfigured in the discourses of republicanism,[6] a significant strain of Renaissance thinking returned to and built upon Greco-Roman modes of knowing. With regard to the question of the natural world, a reinterpretation and reorganisation of knowledge led to the establishment of proto-academic fields of botany and zoology in which plants and animals would be described and taxonomically classified.[7] In the field of scientific medicine, a similar shift occurred, whereby from the twelfth century, "physicians sought to assure themselves and their students or readers that at least some part of medicine, usually medical theory, met the Aristotelian criteria for true knowledge". After 1450, "a series of intellectual upheavals" called such an approach into question. Renaissance humanism displaced the preoccupation with reconciling Aristotle and Galen, bringing to light not only "hitherto unknown or less studied medical

6   Pocock, J.G.A., *The Machiavellian Moment: Florentine Political Thought and the Atlantic Republican Tradition* (Princeton: Princeton University Press, 1975). Pocock's seminal study traces the rebirth of the discourses on citizenship as they reemerged in the ideas of civic humanism in the fifteenth century, and then later in the eighteenth century. As responses to the universality asserted by Judaeo-Christianity, these political vocabularies had to confront what he defined as the secular particularity of the 'Machiavellian moment'.

7   Debus, Allen G., *Man and Nature in the Renaissance* (Cambridge: Cambridge University Press, 1978), 52–53.

books", but also "a range of non-Aristotelian philosophies from Plato to skepticism".[8]

New fields of geography and cartography also emerged. Born in part as a result of the fifteenth-century Portuguese voyages in the eastern Atlantic and those of Columbus beginning in 1492, these encounters brough Europeans into sustained contact with societies on the continent of Africa and in the Americas. As they interacted with the populations in these 'new worlds', Europeans, having themselves undergone a transformation of their self-conception, came to identify these peoples, not only in religious terms (for example, as heathens, pagans and idolators), but also as *Indios* and *Negros*, that is, in terms not to be found within the pre-Encounter Christian narrative. These ascriptive models of identity, the epigraph from Wynter intimates, transformed these populations from understanding their social worlds within their own autocentric cosmogonies, to being *Human Others* in the cosmogony of nature of *Homo politicus* (political *Man*). Such classifications served as the basis upon which the enslavement of those of African hereditary descent together with the dispossession of Indigenous peoples of the Americas would come to be perceived as legitimate and just.

Expropriation of the lands domesticated and inhabited by the Indigenous peoples consequently transformed the landscape of the Americas. Before the coming of Europeans, a specific ecology, or set of ecologies, populated the hemisphere. Recent scholarship has returned to the interpretation of the first settlers and explorers who initially encountered the Indigenous peoples and noted their use of fire, which had profoundly shaped the landscape. Although in the nineteenth-century understanding of Indigenous societies, the use of fire was often denied, now scholars have come to agree that the Indigenous peoples utilised fire for many purposes, such as for hunting, which entailed encouraging undergrowth to increase the presence of herbivores and their predators or surrounding animals with fire to trap them. For pastoralists, burning was useful for moving animals around as well as "to drive off noxious insects". It would also be centrally used to control and harvest crops, as fire "reset the ecological clock" by encouraging plants that need sunlight to grow and "to increase the production of berries, seeds, nuts, and other gathered foods". Fire could also be used as an offensive and defensive weapon, driving away strangers and enemies. It could be utilised to clear routes for travel and as a mode of communication, "propelling messages from one group to the next, and could be 'read' as far as one hundred miles from their source in as short a time as

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8   Siraisi, Nancy G., "Medicine, 1450–1620, and the History of Science," *Isis* 103.3 (2012): 496–497.

one-half hour". Moreover, among the many uses of fire, not all of them were strictly utilitarian, as it could be used in rituals or, according to one explorer, for the most trivial of reasons. Within the "myriad indigenous understandings of the natural world", fire was constituted "as a powerful force or being" which remained indistinguishable from their specific self-conceptions and relations with natural and supernatural forces.[9]

From a global historical perspective, the use of fire by Indigenous peoples of the Americas was not unique. Fire, Stephen J. Pyne has argued, has been fundamental to the existence of both nature and human cultures: "the living world runs on combustion and has co-evolved with the open flame". And, whilst fire can exist without humans, "it has been a species possession—a defining trait," which no other species has been able to manipulate. Consequently, fire has remained central to the shaping of landscapes, that is, to the adaptation of ecosystems based upon the "prescriptions and codes" of a multiplicity of ways of being and behaving in the world.[10] Moreover, according to the scholars who argue that "the Earth has left its natural geological epoch", the Holocene, it was "the mastery of fire by our ancestors [...] that puts us firmly on the long path toward the Anthropocene".[11] But was it such a natural and seemingly inevitable process?

In the context of Louisiana and the wider Mississippi River valley, it has also been established that the Indigenous landscape was marked by the impressive (social and technical) engineering feats of earthen mounds. These elevated surfaces were "a form of monumental architecture, constructed eminences on which activities were conducted or buildings were placed". Extending from southern Canada and the Great Plains to the Gulf of Mexico and the Atlantic coast, estimates of their antiquity vary from 100 BC to Charles C. Mann's assessment that "the earliest known examples appeared in northeastern Louisiana 5,400 years ago, well before the advent of agriculture". In addition to being the residences of chiefs and other elites, mounds could serve as burial sites, as

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9   Krech, Shepard III, *The Ecological Indian: Myth and History* (New York: W.W. Norton, 1999), 101–122; Mann, Charles C., *1491: New Revelations of the Americas Before Columbus* (New York: Alfred A. Knopp, 2006), 250; Pyne, Stephen J., *Fire: A Brief History* (London: The British Museum Press, 2001), 46–64.

10   Pyne, Stephen J., *Fire: Nature and Culture* (London: Reaktion Books, 2012), 9.

11   Steffen, Will, Paul J. Crutzen, and John R. McNeill, "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?," *AMBIO: A Journal of the Human Environment* 36.8 (2007): 614.

communal spaces for the performance of rituals and ceremonies as well as centralised facilities for extensive feasting and food storage.[12]

The building of mounds and the use of fire represent for Mann "two paradigmatic examples" of the Indigenous peoples "on a very large scale, transforming huge swathes of the landscape for their own ends".[13] Such should perhaps lay to rest the once frequent romantic notion that before the arrival of Western Europeans in the Americas, the Indigenous peoples existed in an Edenic setting. Arguing against this "pristine myth", William Denevan has noted that the Indigenous people made imprints on the vegetation, wildlife, agriculture, and the built environment, such that not only were cultivated fields common in a variety of locations; so were houses, towns, and roads, all of which consequently "had local impacts on soil, microclimate, hydrology, and wildlife".[14] Archaeologists employing the panarchy theory of interacting physical and social systems have reached a similar conclusion:

> Paleoecological and archaeological studies reinforce the conclusion that throughout the late Pleistocene and Holocene, environmental change has been the rule rather than the exception. Climate changes on all scales in space and time, and changes in the distribution and composition of both flora and fauna occur continually in response to changes in climate.[15]

This understanding of Indigenous modes of environmental change in the Americas necessarily challenges as well the representation of the "ecological Indian", a variation of the equally static Noble Savage stereotyped image—both expressions of what Johannes Fabian has characterised as the denial of coevalness in which the anthropologist (as observer) and the ethnographic object (as the observed native) do not share the same time.[16] The notion that the Indigenous peoples were natural ecologists and conservationists was most

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12   Lindauer, Owen, and John H. Blitz, "Higher Ground: The Archaeology of North American Platform Mounds," *Journal of Archaeological Research* 5.2 (1997): 170, 192. Mann, *1491,* 254–255. The "advent of agriculture" is meant here presumably in the Americas.

13   Mann, *1491,* 248.

14   Denevan, William M., "The Pristine Myth: The Landscape of the Americas in 1492," in *American Environmental History*, ed. Louis S. Warren (Malden: Blackwell Publishing, 2003), 5.

15   Delcourt, Paul A., and Hazel R. Delcourt, *Prehistoric Native Americans and Ecological Change: Human Ecosystems in Eastern North America since the Pleistocene* (Cambridge: Cambridge University Press, 2004), 164.

16   Krech, *The Ecological Indian*, 14–19. Fabian, Johannes, *Time and the Other: How Anthropology Makes Its Object* (New York: Columbia University Press, 1983). Fabian coined the term

iconically conveyed in the popular imaginary by Louisiana-born actor Iron Eyes Cody's portrayal of the Crying Indian for the 1970s "Keep America Beautiful" anti-pollution campaign.[17]

Moreover, transformations of ecology have not only been restricted to human modes of existence. In his now classic and highly influential 1967 essay, "The Historical Roots of Our Ecological Crisis", Lynn White Jr. noted:

> All forms of life modify their contexts: The most spectacular and benign instance is doubtless the coral polyp. By serving its own ends, it has created a vast undersea world favorable to thousands of other kinds of animals and plants.[18]

Thus, the phenomenon of climate change itself is neither recent nor exclusively a Western attribute nor restricted to an industrial form of social organisation.

Although environmental change can be seen as a phenomenon among all living beings and cultures, all imprints are not equal, nor do they all generate the same kind of ecological change. Indeed, whilst societies that predated the industrial world "influenced their environment in many ways, from local to continental scales", the impacts of these ways of being in the world have "remained largely local and transitory", and according to some environmental scientists and historians "within the bounds of the natural variability of the environment". Such limited effects were due to modes of being, believing and behaving that did not produce the "social and economic organisation, or technologies needed to equal or dominate the great forces of Nature in magnitude or rate".[19]

The emergence, therefore, of secular economic *Man*—that is, of *Homo œconomicus,* the Being whom Adam Smith defined as primarily motivated by a "propensity to truck, barter, and exchange"[20]—constituted a singular departure

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"allochronism" to describe this conceptual approach to understanding non-Western societies.

17   Cody's Cherokee/Cree heritage has been disputed, although his commitment to causes of the Indigenous peoples has not. See Aleiss, Angela, "Native Son," *The Times Picayune*, May 26, 1996, D1.

18   White, Lynn Jr., "The Historical Roots of Our Ecological Crisis," *Science* 155.3767 (1967): 1203.

19   Steffen, et al., "The Anthropocene," 615.

20   Smith noted: "This division of labour, from which so many advantages are derived, is not originally the effect of any human wisdom, which foresees and intends that general opulence to which it gives occasion. It is the necessary, though very slow and gradual

with respect to the ecological transformation of the planet. Although associated with Smith, he did not actually employ this term, and moreover, Mary S. Morgan has argued, Smith's understanding of this figure, unlike that of Thomas Malthus (and many later proponents), comprised additional and complex motivations beyond self-interest, although such was nevertheless a precondition of modern social organisation. Critiques of this social theory began to appear from its early articulations, with it being characterised as a "fictional construction to motivate a virtuous story about commercial society".[21]

However, regardless of whether its explanatory power with respect to "human nature" and motivations can deliver on its claims, over time—with the added force of many theorists and practitioners—an economically driven, self-interested human nature has become the dominant principle in accounting for human behaviour, according to which the realisation of full humanness is evidenced by the attainment of ever-increasing standards of living. In other words, it is the postulation of an 'economic' definition of socio-human orders, an interpretation which was first systematically articulated within the Scottish Enlightenment's stadial theory, which hypothesised the evolution of societies from nomadic hunter-gathering to pastoral herding, to agricultural farming, then to the commercial/exchange basis of social organisation.[22] Moreover, Marxist formulations of history (as being based on shifts from feudalist, to capitalist, to socialist *modes of production*), together with the argument for the nationalisation of the means of production, do not deviate from understanding the human past primarily through its modes of subsistence. Yet it is the definition of the human in predominantly economic terms that legitimise mass consumption and the accumulation of surplus and abundance as virtuous behaviours on the one hand, but which on the other hand bear a direct relation to the question of climate change.

The identification of the Anthropocene era as a rupture with previous periods of human societies correlates with this argument. According to Will Steffen, Paul Crutzen, and John R. McNeill, this shift to a high-energy based industrial world occurred in three stages. Coming on the heels of the

consequence of a certain propensity in human nature which has in view no such extensive utility; the propensity to truck, barter, and exchange one thing for another." Smith, Adam, *An Inquiry into the Nature and Causes of the Wealth of Nations* [1776], ed. R.H. Campbell and A.S. Skinner (London: Oxford University Press, 1976), 25.

21 Morgan, Mary S., "Economic Man as Model Man: Ideal Types, Idealization and Caricatures," *Journal of the History of Economic Thought* 28.1 (2006): 3–4.

22 Meek, Ronald L., *Social and Ignoble Savage* (Cambridge: Cambridge University Press, 1976). Meek's account remains indispensable for understanding the complex role and changes of this idea.

Enlightenment, the first stage from the beginning of the nineteenth to the middle of the twentieth centuries can be identified by "the enormous use of fossil fuels, first coal and then oil and gas well" which "as a rule" used "four or five times as much energy as did agrarian [societies], which in turn used three or four times as much as did hunter gatherers". The second stage, coming after the Second World War and continuing to the present moment (2015 according to these authors), can be identified by economic and population growth that proceeded "faster than at any previous time in human history". Central to this process has been the dramatic increase in the use of petroleum, especially for motor vehicles. The third stage posits that "humankind will remain a major geological factor for many millennia, maybe millions of years to come", an assertion that concurs with the conclusion of the Intergovernmental Panel on Climate Change (IPCC), that "most aspects of climate change will persist for many centuries even if emissions of CO_2 are stopped".[23]

Yet if the first stage of the Anthropocene began in the early nineteenth century, how does one characterise the preceding time period from the fifteenth century to the end of the eighteenth century, when Western Europeans had begun to establish a global, if nonetheless contested, hegemony? A central aspect implicit in the Anthropocene framework, although it is not stated as forcefully and frequently as it could be, relates to another pre-industrial, pre-fossil fuel *use of energy,* that is, enslaved labour, one whose employment remained essential to the conditions of possibility that made such a system realisable.[24] Moreover, whilst both the analyses of the Anthropocene advocates and the IPCC remain insightful with respect to understanding the depth of the contemporary human imprint on the "Earth System", further contextualisation could be employed to explicate phrases such as "anthropogenic emissions" and "human influence" as well as expressions such as "the human-induced contribution to warming" and the "central role of humankind". [25]

The provocative term "Anthropocene"—derived from the Greek *anthropos* meaning "human, mankind" and *cene*, meaning "new"—draws attention to the distinctive intervention in the environment of our present world-system and mode of existence. Yet it also seems to minimise an understanding in which such an imprint can be seen to have only been possible by the emergence of a distinctly new conception of Being Human. In other words, the contemporary

23   Steffen et al., "The Antroprocene," 616–618. IPCC, "Summary for Policy Makers," 27.

24   Steffen, Crutzen, and McNeill note that although fossil fuels were used during the Chinese Song Dynasty (960–1279) and in seventeenth-century London, these were exceptions. See Steffen et al., "The Anthropocene," 615.

25   Loc. cit. See also IPCC, Summary for Policy Makers," 17, 19.

state of the climate can be ascribed not necessarily to the actions of 'humankind' in general, but rather to a specific conception of humankind, an understanding of recent historical origin, and one into which members of all societies are now increasingly being induced at a global level to internalise and to enact. Furthermore, this *conception* has been based on a series of Human Others, who were initially drawn into its framework either through settler and non-settler colonialisms or racially-based enslavement.

The implications remain that the forecast provided by the Anthropocene proponents of "a bottleneck of continued population growth, excessive resource and environmental deterioration" resulting from behaviours during the era of "Great Acceleration" does not sufficiently distinguish the sectors of the world in which excessive resource use can be found.[26] Nor is it fully articulated that this population growth, most extreme in Africa, is not necessarily a concern over a lack of space, but rather a scarcity of basic necessities, a phenomenon exacerbated by the daily operations of the Western-dominated world system. In other words, much of the world's population is paying a price equal to that of the environment. It is therefore in this context that the analysis of the history of the settlement of Louisiana is undertaken in order to illustrate the intersection of ecological and cultural issues before the onset of the Anthropocene era.

2   Colonialism, Slavery, and Levee Construction

Hurricane Katrina has been described as the most costly tropical cyclone and, according to some, "natural" disaster in the history of the United States.[27] The

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26   Steffen et al., "The Anthropocene," 620.

27   Blake, Eric S., Christopher W. Landsea, and Ethan J. Gibney, *The Deadliest, Costliest, and Most Intense United States Tropical Cyclones from 1851 to 2010*, NOAA Technical Memorandum NWS NHC-6 (National Oceanic and Atmospheric Administration, National Weather Service, National Hurricane Center), published August 2011, 5, 9, accessed August 9, 2014. http://www.nhc.noaa.gov/pdf/nws-nhc-6.pdf; Woolsey, Matt, "America's Most Expensive Natural Disasters," *Forbes*, September 13, 2008, accessed August 9, 2014. http://www.forbes.com/2007/10/29/property-disaster-hurricane-forbeslife-cx_mw_1029disaster.html. According to the Insurance Information Institute, "Hurricane Katrina remains the largest single loss event in the history of the global insurance industry, causing an estimated $41.1 billion in insured damages ($45.1 billion in 2009 damages) and 1.7 million claims across six states." See Hartwig, Robert P., and Claire Wilkinson, *Hurricane Katrina: The Five Year Anniversary* (New York: Insurance Information Institute, 2010), 2, accessed August 9, 2014. http://www.iii.org/sites/default/files/1007Katrina5Anniversary.pdf.

levees, which did not hold in the wake of the storm, were a product of a historic understanding and approach to the environment that dates to the colonial origins of the founding of Louisiana as well as to the formation of the social and economic system that would come to define the Americas. As Jeffrey Owens has argued in his seminal study on the early history of levees on the Mississippi, the Indigenous peoples understood the natural patterns of the river, to which they often accommodated themselves by raising mounds, sometimes "with a temple and chief's house upon them, which were used as a refuge during flooding". Another response involved periodic migrations from the floodplains to higher grounds.[28]

Thus, whilst natural conditions heavily influence, and can often circumscribe, the way in which a society comes to be formed, as Owens further noted, there remained no one single approach to the environment in this location: "Native Americans in the floodplain of the Mississippi did not endeavor to prepare large fields for cash crop agriculture, nor did they try to prevent overflows with levees." Indeed, as Daniel Usner has argued, "what became New Orleans had been mainly used by Indians for transport between waterways and seasonal gathering of food sources". Thus, the conditions that "made this site ideal for portage and fishing reduced its potential for permanent occupation".[29] And, for European settlers permanent occupation indeed became the overarching goal, one which according to Jefferson, as noted in the epigraph, meant the 'living generation' could manage the land as they pleased, unless such management, as was the case with the Indigenous peoples, directly contradicted the notion of order of European colonisation and expropriation.

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28   Owens, Jeffrey Alan, "Holding Back the Waters: Land Development and the Origins of Levees on the Mississippi, 1720–1845" (PhD diss., Louisiana State University, 1999), 20. Owens relies here on a description of Native American homes given by a member of Hernando De Soto's expedition, who suggested that the Indigenous peoples built homes on high ground when possible, but raised artificial mounds in areas that tended to overflow. Ibid., 107. As previously noted, mounds could serve several different purposes. Most discussions of the mounds do not mention them being used as refuge against flooding, and given that some were presumably built where flooding was not a concern, such would make sense. In the wake of the Great Mississippi Flood of 1927, the archaeologist Alfred Kidder was cited in an article in *Science* also as stating that the Indigenous peoples built mounds as refuges from floods. See "Indian Mounds as Flood Refuges," *Science* 65.1688 (1927): xiv. An assessment regarding Cahokia, a large settlement with most impressive mounds, also obliquely relates to such a possibility: "There is little indication that the Cahokia floods killed anyone, or even led to widespread hunger." Mann, *1491,* 265.

29   Ibid., 21. Usner, Daniel H. Jr., "American Indians in Colonial New Orleans," in *Powhatan's Mantle: Indians in the Colonial Southeast*, ed. Gregory A. Waselkov, Peter H. Wood and M. Thomas Hatley (Lincoln: University of Nebraska Press, 2006), 164.

The arrival therefore of Europeans, firstly the French, constituted a profound and distinct intervention in the ecological context of the area. With a vision to establish a city in a swampy terrain susceptible to flooding, a particular attitude toward land and a specific set of social arrangements for those who would inhabit such a space would be required. As Eleonora Rohland notes in the present volume, despite being informed by the Indigenous peoples of the Mississippi's flood-regime, "the sources yielded no evidence regarding the transmission of 'hurricane knowledge' from one group to the other."[30] In Craig Colten's formulation, New Orleans was "an unnatural metropolis", one that had to be wrested from nature.[31] So, from the beginning of the European colonisation of what would become Louisiana, the social issues related to land use had to be negotiated.

Construction on the first levees, "ridges of soil heaped up along the natural high ground to hold back high waters", began in the early 1720s, not long after the French began to settle the colony in 1718. It was a project executed under the direction of the Company of the Indies (*Compagnie des Indes*), the trading company charged with colonial settlement and development of French Louisiana. Popularly known as the Mississippi Company, it was established in 1719 by the Scottish financier John Law, and was an expansion of the Company of the West (*Compagnie d'Occident*) which had been created two years before from a merger of the organisation with the other overseas trading companies: Company of the East Indies, Company of China, and Company of Africa.[32]

The Company of the West had taken over the direction of the political affairs of colony, together with a commercial monopoly, from the colony's first proprietor, Antoine Crozat. It was created in order to address the financial situation produced by Louis XIV's economic policies, which had led to a substantial accumulation of debt. Modeled on the British South Sea Company, it had "the dual objectives of (1) debt management and (2) development of colonial trade" and for these reasons, "was granted a trading privilege in exchange for the company's conversion of depreciated government debt, at a lower interest rate, into company stock". In its agreement with the Crown, "the company was given exclusive trading rights to French Louisiana for twenty-five years, while the Crown benefited by the company's conversion on the part of the floating

30   Rohland, Eleonora, "Hurricanes in New Orleans: Disaster Migration and Adaptation, 1718–1794," 141.

31   Colten, Craig E., *An Unnatural Metropolis: Wresting New Orleans from Nature* (Baton Rouge: Louisiana State University Press, 2005).

32   Murphy, Antoine E., *John Law: Economic Theorist and Policy-Maker* (Oxford: Clarendon Press, 1997), 188–212.

debt into shares at a lower interest rate". Law's ambitious investment scheme furthermore involved the absorption of the country's mint as well as the tax farmers (*fermiers généraux*), the system by means of which taxes were collected for the government. Moreover, after several unsuccessful attempts with other central governments, Law convinced the French Crown in 1716 to allow him to establish a privately-owned bank, the General Bank, which was nationalised in 1718 as the Royal Bank (*Banque Royale*), increasing its power according to his "grand design". Law considered the Mississippi Company and the bank "not as distinct separate entities but as one unique enterprise", whose merger would solve France's monetary and financial crises.[33]

By 1720, Law's Mississippi System, "a new El Dorado" based on an "orgy of speculation", had collapsed, although not before making some extremely rich; indeed, from this event, the term millionaire would be introduced into the modern lexicon.[34] As a result of Law's failure, the Company of the Indies surrendered its authority and was eventually forced in 1731 to retrocede the colony to the Crown. The intervening years ushered in an era of new governance, which began in April 1723 with the arrival of royal commissioners and new councilors in the *Conseil Supérieure* and *Conseil de Régie*.[35] During this time, the Superior Court/Council, which would eventually function as the actual governing body of the colony of Louisiana, conducted primarily judicial functions, whilst the Administrative Council performed legislative duties. As the colonial settlers sought to create a livable habitat out of flood-prone swampy area, the Superior Court/Council needed to determine the kind of labour system that would facilitate this endeavor.[36]

Although from the beginning of French settlement, a few colonists were able to procure, through individual means, slaves from Caribbean colonies, it was not until 1719 that enslaved Africans would be imported in more substantial numbers. Approximately 500 were brought to and spread out over the vast colony that then stretched from the Gulf of Mexico to present-day Illinois.[37] For those subjected to such a tragic voyage, not only would survival of the journey itself become a challenge, but also the generally precarious conditions of

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33   Ibid., 112, 167–169, 185.

34   Thomas, Hugh, *The Slave Trade: The Story of the Atlantic Slave Trade, 1440–1870* (New York: Touchstone/Simon and Schuster, 1997), 242–243. Murphy, *John Law,* 3.

35   Giraud, Marcel, *A History of French Louisiana, Volume 5: The Company of the Indies, 1723–1731*, trans. Brian Pierce (Baton Rouge: Louisiana State University Press, 1991), 3.

36   Micelle, Jerry A., "From Law Court to Local Government: Metamorphosis of the Superior Court of French Louisiana," *Louisiana History* 9.2 (1968): 85–107. Giraud, *A History of French Louisiana*, 11–14.

37   Thomas, *The Slave Trade*, 242–243.

existence in the colony that they faced upon arrival. Unsurprisingly, the death toll among slaves was extremely high, as evidenced by only a marginal increase in the presence of Africans from 1719 to 1721, when according to the 1721 census 2,000 had come during this period. Moreover, it was not only those experiencing the horrors of the Middle Passage who encountered a high death toll, but also the more than one thousand European contract labourers (including a distinct German population) and those convicted of crimes, who came in 1717 under the auspices of John Law's Company of the West.[38]

Given the harsh environment, the enslaved, immediately upon arrival in a strange new land, were compelled to grow crops not only for their own subsistence, but also for the slaveholding colonists. Indeed, they would take on much of the agricultural labour as well as undertake significant skilled labour to build the society, such that, within the first decade of their arrival, slaves owned by the Company of the Indies and by individual colonists "were apprenticed to brickmakers, joiners, blacksmiths, locksmiths, sculptors, wheelwrights, saddlers, masons, and carpenters".[39] Moreover, according to Gwendolyn Hall, "[t]he survival of French Louisiana was due not only to African labor but also to African technology", specifically knowledge of rice and indigo production that slaves brought with them.[40]

Another area where slaves of African descent played a crucial role occurred with the building of levees. The initial attempts to use levees in the early 1720s to address the problems in New Orleans of flooding, dampness, and moist desease-breeding ground, required a substantial amount of intense labour, which the colonists did not want to perform. Consequently, the building process did not advance until the arrival of 200 slaves in October 1723 and January 1724 on the *Expédition* and the *Courrieur de Bourbon* respectively.[41] Before being auctioned off, the labour of newly arriving survivors of the Middle Passage was under the control of the Company, who would forcibly employ them on their plantations as well as to work on the levees. In fact, in 1728, a *corvée* was instituted which stipulated that every colonist who had been granted slaves was

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38   Usner, Daniel H. Jr., "From African Captivity to American Slavery: The Introduction of Black Laborers to Colonial Louisiana," *Louisiana History* 20.1 (1979): 25, 28.

39   Ibid., 34.

40   Hall, Gwendolyn Midlo, *Africans in Colonial Louisiana: The Development of Afro-Creole Culture in the Eighteenth Century* (Baton Rouge: Louisiana State University Press, 1992), 121–124.

41   Giraud, *A History of French Louisiana*, 206–207.

required to allow their labour to be employed for public works for thirty work-days.[42]

The twin birth in New Orleans of levee construction and the expansion of slavery in the colony (and thus in the wider colonial French Louisiana) illustrates the inseparability of questions of ecological change from those of social formation, evidenced at a moment when a new society was quite literally being created—one, of course, that transformed the landscape, as many colonial settlements were actually built on Indigenous ones. Expansion from New Orleans, where the first levee was constructed, into the hinterlands required an extraordinary exertion of labour. As a result, in 1728 and 1743 landowners were required to build levees that linked the growing agricultural localities with the more urbanised area of New Orleans. Yet, this goal of building an unbroken series of levees could not be realised because the construction of levees "became a sizable investment for landowners and was only feasible for wealthy planters using slave labor".[43]

Consequently, as Craig Colten has chronicled, by the end of the first phase of French possession of Louisiana in 1763, privately built structures of varying capabilities were constructed approximately fifty miles along the riverfront above New Orleans, although "floods continued to breach these ever-lengthening earthen embankments". It was therefore becoming increasingly clear that levees could not eradicate the dangerous potential of flooding—and, some argued, actually exacerbated the problem, especially since they redirected high water into unprotected territory. These concerns continued through the years of occupation by the Spanish, who had also adopted the contiguous levee policy, and the US incorporation of the territory in 1803. During the former regime, in 1785 a massive flood engulfed New Orleans and the lower valley, and under the latter's administration, successive floods in 1809, 1811, 1813, 1815, 1816, and 1817 also challenged the viability of the levee system. Moreover, by this time, the height of the levees in New Orleans had been raised from four to six feet,

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42   Usner, "From African Captivity to American Slavery," 32. Giraud, *A History of French Louisiana*, 208.

43   Colten, *An Unnatural Metropolis*, 20. A parallel exists with the *corvée* and the requirement of planters to build levees with the creation of dike societies on the coast of the North Sea: "Every owner of the land was obliged to take care of the dike, be it individually, for a certain section of the dike (*Pfanddeichung*), or be it collectively with other members of the community (*Kommuniondeichung*). Anyone who violated this obligation could be forced to leave his land. A proverb in Low-German says: 'De nich will dieken, mutt wieken'. (He who does not want to build dikes, must go)." See Kempe, Michael, "'Mind the Next Flood!': Memories of Natural Diasters in Northern Germany from the Sixteenth Century to the Present," *The Medieval History Journal* 10.1–2 (2007): 331–332.

structures that were maintained with chain-gang labour. Subsequent high water on the Mississippi in 1823 and 1828 continued to prompt the questioning of the viability of the levee system, but the option of outlets proposed by some was supported neither by the government nor by planters in the hinterland: "Outlets would mean huge expenses for the state, and it would expose plantations along the bayous used as floodways to damaging inundations."[44]

According to John M. Barry, the debate as to whether to employ levees or outlets to protect against flooding has always reflected two oppositional understandings of the non-human environment: "Levees represented man's power over nature; outlets represented man's accommodation to nature."[45] And, here a definition can be proposed that designates *"Man"* not as isomorphic with the human, but rather as a specific conception of Being Human. Indeed, levees were not just structures designed to hold back and redirect overflowing waters. At their origins they were fundamental to the viability of New Orleans and the wider Louisiana colony in this specific social formation. In the eighteenth century, inhabited regions for colonists were determined by where levees had been constructed and sustained. As Owens noted, "[l]evees secured Louisiana's principal population centers and guarded the colony's most progressive sectors of development". One of these sectors was agriculture, as the levees were central to protecting crops and farms. Moreover, in the case of New Orleans in the 1720s, the levee "performed special and diversified tasks", including providing docking facilities where cargo could be loaded and unloaded, serving "as a commercial fixture where trading and warehousing occurred", functioning as fortification in the event of attack, and becoming the site of the first French market in the colony. In other words, without a levee no human life was possible in New Orleans.[46]

And to build such a social order in such environmental conditions, Black slave labour was deemed necessary. The slaves of Joseph Villars Du Breuil were "known to have helped clear the site of New Orleans and also worked on the city's first levee".[47] Across the Americas, slave labour was often utilised for public purposes, and in New Orleans this pattern was followed. To secure such labour, another Black Code (*Code Noir*) was issued in 1724, following upon the original act of 1685 drafted by Jean-Baptiste Colbert, which had been designed to address slavery in France's Caribbean colonies. The 1724 act concerned

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44   Ibid., 20–26.
45   Barry, John M., *Rising Tide: The Great Mississippi Flood of 1927 and How It Changed America* (New York: Simon and Schuster, 1997), 39.
46   Owens, "Holding Back the Waters," 40, 76.
47   Ibid., 36.

French Louisiana and contained many of the same provisions: the require-
ment for slaveholders to provide for slaves materially and religiously, for the
status of children born under slavery to follow that of the mother, and severe
penalties for striking a White slaveholder. The act also forbade White subjects
of both sexes from marrying the slaves. Although functioning in a context de-
fined by some historians as being fluid where contempt for the poor also
existed,[48] and being careful not to overemphasise the effects of laws in deter-
mining social reality,[49] the 1724 act nonetheless made clear that slaves lacked
any political subjectivity. It was stipulated in Clause XXIV:

> Slaves shall be incapable of all public functions, and of being constituted
> agents for any other person than their own masters, with powers to man-
> age or conduct any kind of trade; nor can they serve as arbitrators or
> experts; nor shall they be called to give their testimony either in civil or in
> criminal cases, except when it shall be a matter of necessity, and only in
> default of white people; but in no case shall they be permitted to serve as
> witnesses either for or against their masters.[50]

3   Levees, Slavery and the 'Empire of Liberty'

In the wake of the Louisiana Purchase in 1803, the co-existence of the issues
of land use and slavery remained central for the US government as it took
control of the territory. In philosophical terms, for President Thomas Jefferson,
the Louisiana Purchase, unlike empires in the past that over time degenerated
and collapsed, "promised to preserve the fundamentally agricultural, and
hence republican, character of American societies for centuries to come".
Being highly impressed by and also diverging from Malthus's theory of popula-
tion, Jefferson's westward expansion would serve as "the only effective antidote
to population growth, development through time, and the corruption that
accompanied". Therefore, by "enlarging the empire of liberty", new sources of
renovation could be provided, which would maintain the virtue of the nation.[51]

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48   Hall, *Africans in Colonial Louisiana*, 128.

49   Johnson, Walter, *Soul by Soul: Life Inside the Antebellum Slave Market* (Cambridge, MA:
         Harvard University Press, 2000), 122.

50   Cited in: French, B.F., *Historical Collections of Louisiana, Embracing Translations of Many
         Rare and Valuable Documents Relating to the Natural, Civil and Political History of That
         State* (New York: D. Appleton and Company, 1851), 92.

51   McCoy, Drew R., *The Elusive Republic: Political Economy in Jeffersonian America* (Chapel
         Hill: University of North Carolina Press, 1980), 190–203.

Jefferson's "empire for liberty", which almost doubled the size of the nation, proclaimed to spread happiness through self-government and economic prosperity, except for Blacks (for whom he favoured colonisation) and Indigenous peoples, and even to a secondary degree, Spanish and French citizens. It was, according to James Murrin, a gallant attempt to combine "expansion, hegemony, and small government".[52]

Moreover, the Louisiana Purchase reignited the inflammatory question of slavery that the ratification of the US Constitution had merely deferred with its compromises. In the 1804 Senate debate James Jackson, representing Georgia, insisted that "Slavery must be established in that country or it must be abandoned". Otherwise, as the New Jersey senator Jonathan Dayton claimed, the territory would revert to a state of wilderness.[53] In other words, a link between a particular understanding of the environment and slavery was being forged now from the beginning of the US occupation of Louisiana.

After Louisiana entered the Union formally as a state in 1812, slavery remained quite essential to its development. Just the year before, the largest slave rebellion in the United States occurred in St. John the Baptist and St. Charles Parishes, located just above New Orleans. This event occurred in the midst of the sugar boom, which had begun developed out of the sugar cultivation started under Spanish rule during the 1780s, and in which large plantations displaced smaller ones producing indigo and rice.[54] On the eve of the Civil War, sugar had become the principal crop of southern Louisiana, where some of the richest and largest plantations in the South could be found; however, in these estates, less than half of the lands were used to cultivate sugar.[55] The increase in sugar production also led to the growth of New Orleans as the site of the largest slave market in North America, which was located adjacent

52   Murrin, John M., "The Jeffersonian Triumph and American Exceptionalism," *Journal of the Early Republic* 20.1 (2000); 2–4. As Murrin noted, Jefferson first used the phrase in December 1780 in his instructions to George Rogers Clark (older brother of William Clark of the Lewis and Clark expedition) and then subsequently in a letter to James Madison in April 1809, where he asserted confidently that like Louisiana, the Floridas, Cuba and Canada would be annexed, establishing "such an empire for liberty as she has never surveyed since the creation". Jefferson further declared that "no constitution was ever before so well calculated as ours for extensive empire and self-government". Ibid., 3–4.

53   Rothman, Seth, *Slave Country: American Expansion and the Origins of the Deep South* (Cambridge, MA: Harvard University Press, 2005), 27–28.

54   Ibid., 106.

55   McDonald, Roderick A., "Independent Economic Production by Slaves on Antebellum Louisiana Sugar Plantations," in *The Slavery Reader*, ed. Gad J. Heuman and James Walvin (London: Routledge, 2003), 486.

to the levee.[56] The slave market, according to Robert Evans Jr. "performed for the ante-bellum South some of the functions now performed by the New York Stock Exchange, i.e., it served in the eyes of the public as a sensitive reflector of current and future business prospects. As a consequence, the price of slaves, especially in other parts of the South, was often mentioned by local newspapers and by local citizens in letters and diaries, which are sources of conceptions of the general movement of slave prices."[57]

U.B. Phillips's provocative contention that slavery was "less a business than a life" since "it made fewer fortunes than men", implicitly acknowledged the ontological centrality of slavery in shaping the identity of Whites, not only in the South, given its role in the Northern economy.[58] In this regard, as Walter Johnson has shown, the business of the slave market played a key role: "All of the values associated with the antebellum South—the poses and posturing, the whiteness and independence, the calculation and mastery, the hospitality and gentility, the patriarchy and paternalism [...], the honor, brutality, and fancy—were daily packaged and sold in the slave market." In addition to the very powerful economic motivations, slaveholders therefore "bought slaves to make themselves frugal, independent, socially acceptable, *or even fully white;* they acted in accordance with the necessities of their business or the exigencies of their households; they covered the contingency of their own identities in the capacious promises of paternalism,[...] they obscured the dependency of their fantasies with the brutality of their mastery". Slavery therefore enabled the realisation of Whites, here slaveholding men (even if not fully industrial bourgeois *Homo œconomicus*) but nonetheless, as fully human, as *Man:* "Using the ideological imperatives of slaveholding culture—whiteness, independence, rationality, necessity, patriarchy, honor, paternalism, and fancy, they produced, in the classic formation, freedom out of slavery."[59]

Moreover, in the context of antebellum Louisiana, the issue of sustaining the viability of a slave society had significant environmental implications. At the peak of its prominence, in the 1840s, due to its location near the mouth of the Mississippi River, where "it collected the output of midwestern farms and southern cotton plantations", New Orleans competed with Baltimore as the

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56   Johnson, *Soul by Soul*, 2. Emphasis added.

57   Evans, Robert Jr., "The Economics of American Negro Slavery, 1830–1860," in *Aspects of Labor Economics: A Conference of the Universities-National Bureau Committee for Economic Research* (Princeton: Princeton University Press, 1962), 197–198.

58   Phillips, Ulrich Bonnell, *American Negro Slavery: A Survey of the Supply, Employment, and Control of Negro Labor as Determined by the Plantation Regime* [*1918*] (Baton Rouge: Louisiana State University Press, 1966), 401.

59   Johnson, *Soul by Soul*, 116.

second largest city in the nation.[60] During this time, the levees continued to be utilised as the primary mechanism to manage inundations. Their use had increased after the flood of 1828, when the government initiated a campaign to build additional ones: "Parishes raised taxes to pay for the construction of levees and passed laws requiring proprietors along the river to maintain them properly."[61] Yet, as the result of a devastating flood in 1844, a change occurred with the passage of the Swamp Land Acts of 1849 and 1850, in which the Federal Government granted state governments swamp and overflow lands, which had previously been viewed as impediments to land cultivation and to development in general, when not in fact seen, in Harriet Beecher Stowe's terms, as "dangerous and evil places".[62] Technically, the public lands were donated so that the state governments could sell them to investors, for which the proceeds would be used for flood control.

Despite the corruption that led to most of the funds falling into the hands of land speculators, the process produced a debate between civil and military engineers concerning the nature of a comprehensive flood control policy. This discussion resulted from the decision in 1851 by Secretary of War Charles Conrad to grant the state of Louisiana's request for a federal survey of the Mississippi River. The civilian survey was conducted by Charles Ellet Jr., who came with impressive credentials, such as having built the first suspension bridge (over the Schuylkill River in Philadelphia) as well as extensive engineering experience in Europe. In his 1853 report, *The Mississippi and Ohio Rivers,* Ellet argued that the Mississippi flooded for four reasons: "the expansion of cultivation, the extension of the levee system, the creation of cutoffs, and the natural elongations of the Mississippi into the Gulf of Mexico". To address the issue, he

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60   Vigdor, Jacob, "The Economic Aftermath of Hurricane Katrina," *Journal of Economic Perspectives* 22.4 (2008): 138.

61   Pabis, George S., "Delaying the Deluge: The Engineering Debate over Flood Control on the Lower Mississippi River, 1846–1861," *Journal of Southern History* 64.3 (1998): 426.

62   Colten, *An Unnatural Metropolis*, 33. This aesthetic is powerfully rendered in Stowe's novel *Dred*, whose very title invokes the swamp as an abode of otherness. The swamp therefore represents for Stowe also a corruption of morals, and thus became an impediment to social progress. In describing the characteristics of Dred, the son of the rebel Denmark Vesey, she notes: "The wild, dreary belt of swamp-land which girds in those states scathed by the fires of despotism in an apt emblem, in its rampant and we might say delirious exuberance of vegetation, of that darkly struggling, wildly vegetating swamp of human souls, cut off, like it, from the usages and improvements of cultivated life." See Stowe, Harriet Beecher, *Dred: A Tale of the Great Dismal Swamp Beecher Stowe* (Boston: Phillips, Sampson and Company, [1856] 1968), 273–274.

also proposed four approaches: "build stronger levees, improve natural outlets, create artificial outlets, and install a system of reservoirs".[63]

Ellet's report received mixed reactions. While lauded as masterful by some, Captain Andrew Humphreys of the Corps of Topographical Engineers, who led the Mississippi Delta Survey, concluded that the evidence substantiated neither Ellet's claims of the role of cultivation, nor of reservoirs, nor of expanding natural outlets. Ellet himself had claimed that further data would be needed to verify his theories. Moreover, in all these cases, Humphreys asserted, even if they were implemented, the costs were prohibitive. Thus after conducting a thorough survey of every aspect of the river related to flood control, through a process of elimination that offered a strong evidence-based critique of Ellet's survey, Humphreys determined that levees remained the most effective way to control flooding—and, one could surmise from his standpoint the most cost-effective as well, though Humphreys did acknowledge that they were expensive to build and to maintain.[64]

In the wake of the rise of proto-scientific management, where hydraulic engineering played a role in the development of internal improvements, the "levees only" approach was solidified. By the onset of the US Civil War, the country had constructed a levee system "built largely by slaves and convicts and paid for by taxes on shippers, mandated contributions from upstream planters, and the state".[65] This theory held until the Great Mississippi Flood of 1927 vitiated it. After this disaster, a series of reservoirs, floodways, cut-offs, and spillways— some of the things proposed by Ellet in the 1850s—were adopted. The Great Flood of 1927 also powerfully revealed the intimate relation in the post-slavery context of racial hierarchy and the construction of levees that had previously defined the use of enslaved labour during the antebellum era. In response to the flood, 154 relief camps were created through the combined efforts of the Red Cross, the Department of Commerce, and the National Guard to provide housing and provisions to flood refugees. And, since the South was rigidly segregated on the basis of the "separate but equal" doctrine, one which was codified in Louisiana in the 1896 Supreme Court case *Plessy v. Ferguson,* then so were the camps.[66]

Since "separate but equal" often meant "separate and starkly unequal", treatment in the camps differed along racial lines. Whereas in camps for Whites,

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63   Pabis, "Delaying the Deluge," 430–434.

64   Ibid., 435–449.

65   Colten, *An Unnatural Metropolis*, 30.

66   Spencer, Robyn, "Contested Terrain: The Mississippi Flood of 1927 and the Struggle to Control Black Labor," *Journal of Negro History* 79.2 (1994): 172.

"National Guard Officers helped in camp administration and performed, at most, an advisorial role to the refugees", on the other hand, the National Guard was armed in the Black camps, which "served as holding pens designed to ensure the retention and preservation of the Southern labor force". As a result, Black refugees were often not allowed to leave the camps and repeatedly "were being conscripted out to local industries against their will".[67] Such forced labour had indeed defined the post-slavery era, and especially along the Mississippi with respect to the construction of levees. Thus, in Greenville, which suffered severe damage in the storm, "[p]olice and guardsmen impressed every black male they saw and sent them to the protection levee". Such a pattern of Black sacrifice for the good of the levee had occurred previously in Greenville. According to John Barry, in 1912, it was reported in the *New York Times* that when an engineer ran out of sandbags, he ordered several hundred Black prisoners "to lie down on top of the levee and as close together as possible". This action lasted for an hour and half, and "prevented the overflow that might have developed into an ugly crevasse".[68]

Although the *Times* reporter described this idea as brilliant, LeRoy Percy, an influential former US Senator and planter patriarch in Greenville, disapproved of such actions as "men were economic units competing with other men, not with sandbags". Despite such disagreement, however, Percy, who had fought against the Ku Klux Klan and those attempting to deprive Blacks of voting rights, manipulated his son, William Alexander (whom he had the mayor of Greenville appoint as head of the flood relief committee) into adopting the policy of keeping Blacks in Greenville during the flood to work on the levees and to unload (without pay) Red Cross rations for Whites. According to Barry, the Great Flood threatened the society that Percy's family for generations had worked to create, and their struggle, which "began as one of man against nature [...] became one of man against man". Meanwhile, down the river in New Orleans, the elites decided to blow up a levee at Caernarvon, which would destroy St. Bernard and Plaquemines Parishes and immediately transform 10,000 residents into flood refugees. Business leaders felt that "[p]erhaps the city would have been safe without dynamiting the levee. But its reputation, would not have been". And so they initiated a public relations campaign about safety.[69] These actions illustrate that the role of levees extended beyond the environmental, as they also structured the social order.

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67   Ibid., 172–173.
68   Barry, *Rising Tide*, 131, 207.
69   Ibid., 17, 131, 234–254.

4   The Sustainability of *Homo œconomicus*

Given Louisiana's history of attempting to control flooding, the response to Hurricane Katrina, as the most devastating and costly storm in US history, has profound implications. Scholars collaborating on an examination of the reconstruction of New Orleans after Katrina from a comparative and historical perspective have concluded that the approach over the *longue durée* has not substantially improved security from the flooding: "For three centuries, New Orleans has sought to lessen the impacts of its recurrent floods and hurricanes by providing marginal increases in safety." The irony remained, however, that by "doing so, they laid the groundwork for the next catastrophic failure". As an example, the improvement of the levees and floodways that successfully divert high waters seem "to make the city safer from river floods but not from hurricanes". Yet, historically safety has been compromised at the expense of development. Moreover, for these same three centuries, the reconstruction strategy has been to "rebuild the familiar" even if "in safer, better, and more equitable ways". However, reconstruction has often exacerbated some of the issues that led to the problem itself. After Katrina more land was required to replace housing and infrastructure, as these should now conform to higher standards. The residents themselves "almost universally reject" any proposals that suggest, for example, a moratorium on building. And it appears heretical to propose any changes in land use or the restoration of wetlands to make the city safer.[70]

What is even more heretical is the argument put forth by Jacob Vigdor. Whilst some environmental scientists might question whether rebuilding New Orleans after Hurricane Katrina would be a sensible thing to do, according to Vigdor, "given the city's precarious geological position and the contribution of past land reclamation to the city's current vulnerability", the more basic question remains "fundamentally an economic one". Employing a comparative analysis, he has pointed out that Chicago after the 1871 fire, San Francisco after the 1960 earthquake, and Hamburg after the 1943 bombing during World War II, were all able to rebound following their respective disasters. However, New Orleans's recovery will be difficult because the city has been challenged by certain economic factors with which the city was plagued before the devastation caused by Hurricane Katrina.[71]

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70   Kates, R.W., C.E. Colten, S. Laska, and S.P. Leatherman, "Reconstruction of New Orleans after Katrina: A Research Perspective," *Proceedings of the National Academy of Science* 103.40 (2006): 14653–14660.

71   Vigdor, "The Economic Aftermath," 135–138.

For instance, not only was there a declining population, with "white flight" occurring from the city center and from the wider metropolitan area, which suggests a general deficit in jobs resulting from a shortage of economic opportunity. Moreover, the existing opportunities tended to be "concentrated in industries with little potential for long-term advancement or productivity growth". The New Orleans labour market has traditionally been overrepresented in the transportation, entertainment, and public sectors, having essentially derived its economic strength from its port location and from tourism. Whilst the pre-Katrina lack of economic opportunity might have offset the price of renting or owning a house, which was lower than the cost of construction, a suppressed housing market would be difficult to maintain with the kind of new building that would be needed to conform to codes that could withstand the potential damage from future storms.[72]

Vigdor concluded his examination with a controversial assertion: "the plain economic reality is that [New Orleans's] rationale for existence has been dealt an irreversible blow". Noting that in comparison to other cities with colonial heritages, New Orleans remains distinct in its self-presentation. For instance, as New York became a center of manufacturing and subsequently of the postindustrial economy, it "lost almost every vestige of its Dutch colonial origins". Also, perhaps overstating the example, he claimed that contemporary San Francisco "shows few traces" other than its name, of Spanish colonialism. Yet, "[b]ecause New Orleans did not industrialize, it has no reason to plow under its historic core". Indeed, its residents "can claim ties to a colonizing nation that ceded jurisdiction more than 200 years ago", which means that its "ability to retain this heritage through the centuries is, ironically, a reflection of its economic failure". Vigdor does not remain convinced that simply because the city is a "precious cultural artifact" that "it must be restored to its slowly declining former self". Thus, whilst political pressure to rebuild the city remains strong, he insisted, "the economic pressure is nonexistent".[73]

Therefore, the question of reconstruction remains inextricably linked to attempts to reimagine the social order. Whilst Vigdor's provocative conclusion might be neither feasible nor convincing, especially to residents of New Orleans, nonetheless, the current policy of "rebuilding the familiar", evidenced by the speed and the manner of funding in which the Superdome was built, will most likely reproduce the same social and ecological issues. The Superdome was rebuilt because it was based on the premise that what is good economically for the middle and upper classes (as the 'job providers') is also good for

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72   Ibid., 140–143.
73   Ibid., 151, 153.

the wider society, as the behaviours of these groups embody *Homo œconomicus, Man,* the referent subject of the order, the basis for securing social stability. And yet, if such were the case, then all of the policies designed to secure the interests of the non-middle classes, as part of the 'general interests' of society, should have indeed lifted the poor out of their precarious situation by now. Instead, many post-Katrina policies have had deleterious effects on the Black and poor residents in New Orleans and the Gulf area, a central one being their permanent displacement.

Moreover, prioritising the reconstruction of the Superdome formed part of the enacting of the overarching objective of fostering 'economic growth', the supraordinate *telos* (goal) and seemingly unquestionable assumption of our present modern world-system. The challenge remains difficult because the discourse of economics, as Robert H. Nelson has demonstrated, functions in a theological manner similar to a religion; and thus for us, as *Homo œconomicus*, it remains "the ultimate source of meaning", one with its own secular salvation schema (soteriology)—that of economic redemption by not succumbing to the forces of natural scarcity.[74] It is also in this context that the hegemonic relationship with nature can be understood. To return to Jefferson, it belongs to the living generation. *Belongs.* Consequently, the prescriptive role of the dominant global financial institutions (Wall Street, International Monetary Fund, World Bank, European Central Bank, Federal Reserve) must be above all to secure this metaphysics, and to do so in such an absolutist manner—as Nelson argued—due to its monotheistic Judaeo-Christian intellectual origins. As an example, structural adjustment policies that emphasise privatisation, deregulation and austerity of central government spending must necessarily subordinate social and 'human' interests (health, education, housing, civil service sectors) in order to achieve its goal of an efficient economy. Rather than viewing this in moral terms as simply the greed of the one percent, it can be seen in logical culture-centric terms. A nation's gross national product (GNP) and its economic growth do not necessarily need to correlate with the real-life conditions of the non-middle classes. Indeed, this incongruity is because the strain on our planetary habitat and structural inequality remain systemic to the instituting of economic growth. Thus, in order to come to terms with the vast and global disparities of wealth and the devastation of the earth, it becomes increasingly difficult to see how these can be approached without a fundamental reconfiguration of our present self-understanding as *Homo œconomicus, Man.*

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74   Nelson, Robert H., *Reaching for Heaven on Earth: The Theological Meaning of Economics* (Savage: Rowan and Littlefield Publishers, 1991), xxv.

In his now classic 1970 "Address to the Board of Governors", then World Bank President Robert McNamara made a series of stunning statements, which might qualify as apocalyptic (a very American intellectual tradition), being situated in what Robert H. Nelson has more recently described as the "new holy wars" between economic religion and environmental religion (with its worship of a pristine nature and its Calvinistic preaching against greed, human corruption, and excessive pride).[75] Nonetheless, given that much of the speech fitted within the normative discourse of economics, especially his discussion on population control, it makes McNamara's assessment all the more stunning. Quoting the Nobel Prize recipient and distinguished Canadian statesman Lester B. Pearson, McNamara asserted that

> a planet cannot, any more than a country, survive, half-slave, half-free, half-engulfed in misery, half-careening along towards the supposed joys of almost unlimited consumption. In that direction lies disaster, yet that is our direction today unless we are prepared to change course—and to do so in time.[76]

Despite his commitment to neo-classical economics, McNamara did not see the solution primarily in economic terms:

> There are really no material obstacles to a sane, manageable, and progressive response to the world's development needs. The obstacles lie in the minds of men. We have simply not thought long enough and hard enough about the fundamental problems of the planet. Too many millennia of tribal suspicion and hostility are still at work in our subconscious minds.[77]

Here one might want to challenge the aforesaid terms as many have indeed thought long and hard; rather, it may be a question of the terms of diagnosis and the prescription to solve the issue. Nonetheless, he does not remain fully epistemologically committed to the current explanation of social reality.

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75   Nelson, Robert H., *The New Holy Wars: Economic Religion vs. Environmental Religion in Contemporary America* (University Park: Pennsylvania State University Press, 2010).

76   McNamara, Robert S., "Address to the Board of Governors," President's Address, World Bank Annual Meeting, September 21, 1970 (Washington, D.C.: World Bank Publications Unit, 1977), 21, 23, accessed January 15, 2015. http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/11/24/000333037_20111124024100/Rendered/PDF/557810WP0Box360y0RobertoS.0McNamara.pdf.

77   Ibid.

McNamara concluded his speech with a call for the formation of a new community, noting that our global civilisation is "in fact an inescapable community, united by the forces of communication and interdependence in our new technological order." Therefore, the situation can neither be solved only within the social science paradigm of economics, nor by utilising more technology. It rather remains a question of redefining the altruism underlying our present global system of social relations:

> Thus the challenge of the scientific revolution is not a tremendous technological conundrum like putting a man on the moon. It is much more a straightforward moral obligation, like getting him out of a ghetto, out of a favella (sic), out of illiteracy and hunger and despair. We can meet this challenge if we have the wisdom and moral energy to do so. But if we lack these qualities, then I fear, we lack the means of survival on this planet.[78]

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78   Ibid., 23.

PART 3

Present

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Science (and Policy) Friction: How Mass Media Shape US American Climate Discourses

Maxwell T. Boykoff and Michael K. Goodman

Abstract

In the context of the US approach to climate science and policy, this chapter explores the cultural politics embedded in the processes of how the mass media shapes climate change discourses. These cultural politics are explored through a critical discussion of the claims-makers that get media 'air time', the power-laden storytelling of media reporting, a potted history of US reporting on climate change and, finally, a newer form of climate storytelling through public opinion polling. The chapter argues, amongst other things, that mass media reporting and discussions of climate change and climate change science work to inform— paradoxically at various times and places—but also obfuscate and complicate climate science policy and its associated cultural politics. Overall, we suggest that in the US, media reporting on climate change—which must be fully contextualised in the macro and micro power relations that co-create and inform it—has helped address, analyse and discuss climate-related issues but has not and cannot answer them.

1 Introduction

> "For the sake of our children and our future,
> we must do more to combat climate change."
>
> —US PRESIDENT BARACK OBAMA, *State of the Union Address, February 12, 2013.*

In his 2013 "State of the Union" (SOTU) address, United States (US) President Barack Obama used strong rhetoric on climate change. And media outlets— spurred on by key pundits, journalists and editors—took note. To give some examples, Darren Goode at *Politico* wrote that Obama's statements were "strong enough call(s) to action to appease most climate advocates, even those who had said in the days leading up to the speech that they wanted Obama to

lay out a detailed plan of attack".[1] Stephen Stromberg from *The Washington Post* commented, "President Obama began his State of the Union address Tuesday night by threatening Congress. And, on global warming, that's a good thing".[2] As Obama began his second term in the most powerful office on planet Earth, by way of media reactions to the speech, an onlooking public citizenry saw 'hope' rise again for more comprehensive climate change engagement from the US.

Indeed, all of this stands in stark contrast to President Obama's previous SOTU addresses, in which he rarely uttered the word "climate change". This discursive absence from previous speeches was far from trivial, and has numerous implications: by not confronting climate issues explicitly, it was argued that opportunities for further scientific research and policy action were severely limited.[3] The discursive silence from the Obama Administration on climate change was thought to also have put a damper on international climate negotiations as well as on science–policy cooperation in the context of this high-stakes 21st century issue. Yet there remain many open questions regarding how President Obama may or may not square this new rhetoric with ongoing policy deliberations regarding symbolically and materially critical climate-related issues in his second term, such as offshore drilling, a tax on carbon emissions, subsidisation of carbon-based fuel extraction, and decision-making on oil and gas leases for hydraulic fracturing (or "fracking"). Put into (popular) cultural context through the words of musician Ben Harper in the song 'Ground on Down' from his 1995 album *Fight for your Mind*, "there are good deeds and there are good intentions. They're as far apart as heaven and hell".

As evidenced by Obama's back and forth on climate policy, over the past decades, the dynamics of US American science and politics have clearly shaped media coverage of climate change. Yet it is also worth noting and considering how media representations have shaped ongoing scientific and political considerations, decisions and activities. In other words, it is instructive to consider how mass media have influenced who has a say and how in the public

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1 Goode, Darren, "Obama's State of the Union Climate Call May Buy Time for EPA," published by *Politico*, February 12, 2013, accessed December 14, 2013. http://www.politico.com/story/2013/02/obamas-state-of-the-union-climate-call-may-buy-time-for-epa-87567.html.

2 Stromberg, Stephen, "In State of the Union, Obama Threatens Congress on Climate Change," *The Washington Post*, February 13, 2013, accessed December 14, 2013. http://www.washingtonpost.com/blogs/post-partisan/wp/2013/02/13/obama-state-of-the-union-climate-change-sotu/.

3 Boykoff, Maxwell, "A Dangerous Shift in Obama's Climate Change Rhetoric," *Washington Post*, January 29, 2012, accessed December 14, 2013. http://wapo.st/zf2GL0.

arena. By exploring some of the key processes involved in these interactions—in the context of North American science, policy and public arenas—we seek to contribute to wider considerations in this volume.

The media in the US (and around the world) are constituted by many institutions, processes and practices that together serve as 'mediating' forces between communities such as science, policy and civil society. Media segments, articles, clips and opinion pieces represent critical links between people's everyday realities and experiences, and the ways in which these are discussed at a distance between science, policy and public actors.[4] People throughout society rely upon media representations to help interpret and make sense of the many complexities relating to climate science and governance. Furthermore, media messages are critical inputs to what forms public discourse on current climate challenges.

These spaces are what we now refer to as the "cultural politics of climate change": dynamic and contested spaces where various 'actors' battle to shape public understanding and engagement.[5] These are places where formal climate science, policy and politics operate at multiple scales, and are dynamic as well as contested processes that shape how meaning is constructed and negotiated and taken up. In these spaces of the 'everyday', cultural politics involve not only the discourses that gain traction in wider discourses, but also those that are absent.[6] Again, as evidenced by the Obama SOTU example that begins this chapter, considering climate politics this way helps to examine "how social and political framings are woven into both the formulation of scientific explanations of environmental problems, and the solutions proposed to reduce them"[7] and the 'truth regimes' that construct these framings and solutions.

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4   Starr, Paul, *The Creation of the Media: Political Origins of Modern Communications* (New York, NY: Basic Books, 2004).

5   E.g. Boykoff, Maxwell, and Michael K. Goodman, "Conspicuous Redemption? Reflections on the Promises and Perils of the 'Celebritization' of Climate Change," *Geoforum* 40 (2009): 395–406.

6   Derrida, Jacques, "Structure, Sign, and Play in the Discourse of the Human Sciences," in *Writing and Difference*, ed. Jacques Derrida (Chicago: University of Chicago Press, 197), 278–293.

7   Forsyth, Timothy, *Critical Political Ecology: The Politics of Environmental Science* (London: Routledge, 2003), 1.

2   Of Fossils & Freedom: Influential Claims-makers in the Public Arena

The cultural politics of climate change reside in a diversity of spaces and places, from workplaces to pubs and kitchen tables. Actors on this stage range from fellow citizens to climate scientists as well as business industry interests and activists of environmental NGOS (ENGOS). Over time, individuals, collectives, organisations, coalitions and interest groups have sought to access the power of mass media to influence the architectures and processes of climate science, governance and public understanding through various media 'frames' and 'claims'.

Questions regarding "who speaks for the climate" involve considerations of how various perspectives—from climate scientists to business industry interest and ENGO activists—influence public discussions on climate change.[8] 'Actors', 'agents', or 'operatives' in this theatre are ultimately all members of a collective public citizenry. However, differential access to media outlets is a product of differences in power, and power saturates social, political, economic and institutional conditions undergirding mass media content production.[9]

In the highly contested US American milieu of climate science and governance, different actors have sought to access and utilise mass media sources in order to shape perceptions on various climate issues parallel to their perspectives and interests.[10] For example, 'contrarians', 'skeptics', or 'denialists' have had significant discursive traction in the US public arena over time,[11] particularly by way of media representations.[12] In particular, resistances both to diagnoses of the causes of climate change and to prognoses for international climate policy implementation have been often associated with the political right: the Republican Party and more particularly a right-wing faction called the "Tea Party".[13] John Broder of *The New York Times* described this right-of-

8   Boykoff, Maxwell, *Who Speaks for Climate? Making Sense of Mass Media Reporting on Climate Change* (Cambridge: Cambridge University Press, 2011).

9   Wynne, Brian, "Elephants in the Rooms Where Publics Encounter 'Science'?" *Public Understanding of Science* 17 (2008): 21–33.

10   Nisbet, Matthew C., and Chris Mooney, "Framing Science," *Science* 316 (2007): 56.

11   Leiserowitz et al., "Climategate, Public Opinion and Loss of Trust," *American Behavioral Scientist* 57.6 (2013): 818–837. doi:10.1177/0002764212458272.

12   Boykoff, Maxwell, "Public Enemy No.1? Understanding Media Representations of Outlier Views on Climate Change," *American Behavioral Scientist* 57.6 (2013): 796–817. doi:10.1177/0002764213476846.

13   Dunlap, Riley E., "Climate-Change Views: Republican-Democrat Gaps Extend," *Gallup*, May 29, 2008.

centre US political party stance as an "article of faith", and polling data have shown that "more than half of Tea Party supporters said that global warming would have no serious effect at any time in the future, while only 15 percent of other Americans share that view".[14]

The conservative vanguard that won and retained a Republican majority in the House of Representatives in the past two national election cycles of 2010 and 2012 has been comprised of many actors who have taken a sceptical stance on the connection between greenhouse gas emissions and climate change. Journalist Ronald Brownstein commented in the *National Journal* that many "have declared the science either inconclusive or dead wrong, often in vitriolic terms".[15] Moreover, despite the fact that carbon-based industry interests have exerted considerable influence over climate policy in the United States, associated scientists and policy actors who have questioned the significance of human contributions—often dubbed 'climate contrarians'—have been primarily housed in US universities, think tanks and lobbying organisations.[16]

Non-nation state organisations such as the Heartland Institute have held numerous meetings to promote contrarian views on climate science and policy.[17] In short, issues associated with 'what is' and 'what to do' about climate change have been a politically divisive issue in the US and North American more broadly. Through a number of intersecting norms and trends in US media outlets (to be described further below), media representations have contributed significantly to the perception of the North American political sphere as a highly polarised one when taking up climate issues.

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14   Broder, John M., "Skepticism on Climate Change is Article of Faith for Tea Party," *The New York Times*, October 21, 2010, A1.

15   Brownstein, Ronald, "GOP's New Senate Class Could Be Conservative Vanguard," *National Journal*, September 25, 2010.

16   Dunlap, Riley E., "Climate Change Skepticism and Denial: An Introduction," *American Behavioral Scientist* 57.6 (2013): 655–659. doi: 10.1177/0002764213477097; McCright, Aaron M., "Dealing with Climate Contrarians," in *Creating a Climate for Change: Communicating Climate Change and Facilitating Social Change*, ed. Susanne C. Moser and Lisa Dilling (Cambridge: Cambridge University Press, 2007), 200–212.

17   Goodman, M., and J. Littler, "Celebrity Ecologies: Introduction," *Celebrity Studies* 4.3 (2013): 269–275; Boykoff, Maxwell, and Shawn Olson, "'Wise Contrarians' in Contemporary Climate Science-Policy-Public Interactions," *Celebrity Studies* 4.3 (2013): 276–291; Hoffman, A.J., "Talking Past Each Other: Cultural Framing of Skeptical and Convinced Logics in the Climate Change Debate," *Organization and Environment* 24.1 (2011): 3–33.

3   Contributions to Climate Storytelling

The complex and multi-faceted issue of climate change is an issue that cuts to the heart of humans' relationship with the environment. The cultural politics of climate change are situated, power-laden, media-fed and recursive in an ongoing battlefield of knowledge and interpretation.[18] Mass media link these varied spaces together, as powerful and important interpreters of climate science and policy, translating what can often be alienating, jargon-laden information for the public citizenry, broadly construed. Media workers and institutions powerfully shape and negotiate meaning, influencing how citizens make sense of and value the world.

In the high-profile US context, journalists, producers and editors as well as scientists, policymakers and non-nation state actors must scrupulously and intently negotiate how climate is considered as a 'problem' or a 'threat'. As part of this process, it has been demonstrated that media reports have often conflated the vast and varied terrain—from climate science to governance, from consensus to debate—as unified and universalised issues.[19] As a consequence, conflated representations can confuse rather than clarify: they can contribute to ongoing illusory, misleading and counterproductive debates within the public and policy communities on critical dimensions of the climate issue. To the extent that US mass media fuse distinct facets into climate gestalt—by way of 'claims' as well as 'claims makers'—collective public discourses, as well as deliberations over alternatives for climate action, have been poorly served.

There are facets of climate science and policy where agreement has become strong and convergent agreement dominates. In other areas, meanwhile, contentious disagreement has garnered worthwhile debate and discussion. As an example of strong agreement among relevant expert communities, research over the past decades has consistently provided evidence that humans contribute to 20th and 21st century climate change. As an example of an area of ongoing (and contentious disagreement), research on the connections between anthropogenic climate change and the frequency of extreme events (e.g. hurricane landfalls in the US Gulf Coast, tornadoes in the US Midwest) remains a place of ongoing debate. However, the conflation of these diverse dimensions into one sweeping issue through media representations has con-

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18   Boykoff, Maxwell, Ian Curtis, and Michael K. Goodman, "Cultural Politics of Climate Change: Interactions in Everyday Spaces," in *The Politics of Climate Change: A Survey*, ed. Maxwell Boykoff (London: Routledge/Europa, 2009), 136–154.

19   Boykoff, *Who Speaks for Climate?*

tributed to confusion. Moreover, this has created a breeding ground for manipulation from outlier viewpoints to inadvertently or deliberately skew public discourse and added to further confusion in the public realm.

Regarding 'claims makers', efforts to make sense of complex climate science and governance through media representations involve decisions regarding the 'experts' or 'authorities' who speak for climate. This is particularly challenging when covering climate change, where indicators of a climatic change may be difficult for most people to detect.[20] Moreover, in the advent and increasingly widespread influence of new and social media (along with fewer 'gatekeepers' of content generation), the identification of 'expertise' can be more, rather than less, challenging. The abilities to quickly conduct a Google search for information is in one sense very liberating; yet, in another sense, this unfiltered access to complex information also intensifies possibilities of short-circuiting peer review processes (and determinations by 'experts'), and can thereby do an "end-run around established scientific norms".[21] In other words, these developments have numerous and often paradoxical reverberations through ongoing and contentious us public discourses on climate change.

Media conflation of claims and claims makers has been wrapped up in inherent and general challenges of translation. Within language resides the power to effectively (mis)communicate. However, differences in language use between science, policy, media and civil society can unavoidably impede efforts to make climate change—or any other issue—meaningful. In this way, important research, effective arguments, and interesting insights can suffocate under a wet blanket of jargon. Andrew Weaver has noted, "For the average person, the scientific jargon emanating from [scientists'] mouths translates into gobbledygook."[22] Considered in this way, responsibilities for media conflation cannot be placed on journalists, producers and editors themselves. Instead, these can be partly attributed to long-standing differences between The Two Cultures—sciences and humanities—first explained by C.P. Snow in the 1950s,[23] and further elaborated in recent years in the context of climate science

20   Andreadis, Eleni, and Joseph Smith, "Beyond the Ozone Layer," *British Journalism Review* 18.1 (2007): 50–56.

21   McCright, Aaron M., and Riley E. Dunlap, "Defeating Kyoto: The Conservative Movement's Impact on U.S. Climate Change Policy," *Social Problems* 50.3 (2003): 359.

22   Weaver, Andrew, *Keeping Our Cool* (Toronto, Ontario: Viking Canada, 2008), 29.

23   Snow, Charles Percy, *The Two Cultures* (Cambridge: Cambridge University Press, 1959).

policy by scholars such as Mike Hulme[24] as well as Matthew Nisbet and colleagues.[25]

While media interventions seek to enhance understanding of complex and dynamic human–environment interactions, vague and decontextualised reporting instead can enhance bewilderment. For example, by collapsing distinctions between evidence-based science and policy opinions, and by overlooking places where there is convergent agreement or divergent views within expert communities, public understanding has suffered in the US.[26] This can be resolved in part by placing climate science and policy issues effectively *in context*. Context helps sort out marginalised views from counterclaims worthy of consideration on various aspects of climate change. Without providing such context, it becomes more (rather than less) challenging for citizens and policy actors to make sense of these issues, influencing their everyday lives and livelihoods.

There are many reasons why US American media accounts have failed to provide greater nuance in these aspects of climate change. Among them, processes behind the building and challenging of dominant discourses take place simultaneously at multiple scales.[27] Moreover, media representations are derived through dynamic and non-linear relationships between scientists, policy actors and the public that is often mediated by journalists' news stories.[28] In these relationships, multi-scalar processes of power shape how mass media depict climate change. Processes involve an inevitable series of choices to cover certain events within a larger current of dynamic activities, and provide mechanisms for privileging certain interpretations and 'ways of knowing' over others. The resulting images, texts and stories compete for attention and thus permeate interactions between science, policy, media and the public in varied ways. Furthermore, these interactions spill back onto ongoing media representations. Through these selection and feedback processes, mass media have given voice to climate itself by articulating aspects of the phenomenon in particular ways, via claims makers or authorised speakers. In other words, through the web of contextual and dynamic factors, the stream of events in our shared

24   Hulme, Mike, "Geographical Work at the Boundaries of Climate Change," *Transactions of the Institute of British Geographers* 33.1 (2008): 5–11.

25   Nisbet, Matthew C. et al., "Four Cultures: New Synergies for Engaging Society on Climate Change," *Frontiers in Ecology and the Environment* 8.6 (2010): 329–331.

26   Boykoff, "Public Enemy No.1?;" Leiserowitz, "Climategate."

27   Boykoff, M., and T. Yulsman, "Political Economy, Media and Climate Change—the Sinews of Modern Life," *Wiley Interdisciplinary Reviews: Climate Change* 4.5 (2013): 359–371.

28   Carvalho, Anabela, and Jacquelin Burgess, "Cultural Circuits of Climate Change in UK Broadsheet Newspapers, 1985–2003," *Risk Analysis* 25.6 (2005): 1457–1469.

lives gets converted into finite news stories. Thus, constructions of meaning and discourse on climate change are derived through combined structural and agential components that are represented through mass media to the general public.

4   The Growth of US American Media Coverage of Climate Change

While the critical issue of 'climate change' emerged significantly in the North American public arena in the late 1980s, the roots of media treatment of climate change run much deeper. The sprouts of climate coverage have surfaced alongside the birth and growth of modern media communications over the past century. Through the propagation of information via numerous channels and outlets, circulation and readership of various media publications in North America flourished.[29] Along with these developments came idealised journalistic standards of accuracy, accountability, independence, balance and checks on profit.[30]

However, corporate concentration, conglomeration and commercialisation of mass media in the early twentieth century carried conflicting impulses of expanding democratic speech and corporate capitalist pursuits of profit.[31] Many mass media organs transformed into large-scale commercialised news apparatuses, and power of mass media became both amplified and more entrenched in society.[32]

Over this period of time, mass media coverage shifted from attention paid predominantly to weather, food and climate to the addition of numerous articles that sought to describe the significance of this scientific research for society. While still scant, relative to the quantity of contemporary coverage of climate change, the spheres of climate science and mass media further came together in the 1930s.

In the subsequent three decades, US media coverage of climate change remained sparse, where climate science reports and meetings in the 1960s and 1970s, such as the conference "Causes of Climate Change" hosted by the

29   Starr, *The Creation of the Media.*
30   Jones, Alex S., *Losing the News: The Future of the News that Feeds Democracy* (Oxford, UK: Oxford University Press, 2009).
31   Graber, Doris, Media Power in Politics (Washington, D.C.: CQ Press, 2000); Doyle, Gillian, *Media Ownership: The Economics and Politics of Convergence and Concentration in the UK and European Media* (London, UK: Sage Publications, 2002).
32   McChesney, Robert W., *Rich Media, Poor Democracy: Communication Politics in Dubious Times* (Chicago: University of Illinois Press, 1999).

National Center for Atmospheric Research (NCAR) in 1965, only generated occasional pieces. Yet events over this time period (such as the first Earth Day in 1970) prompted ongoing considerations of interactions as the human–environment interface, while the global oil shocks in the 1970s began to draw attention to questions of energy security and the environment. During this time, scientific conferences exploring climate themes also increased. Bookending this decade, a 1971 conference entitled Study of Man's Impact on Climate was held at Stockholm, and in 1979 the World Meteorological Organisation (WMO) organised the first World Climate Conference in Geneva, Switzerland.[33]

The early 1980s began to see more sustained coverage of climate science, focusing mainly on prominent and charismatic scientists such as the National Aeronautics and Space Administration's (NASA) James Hansen and then-NCAR's Stephen Schneider. For example, a front-page story at *The New York Times* in 1981 featured Hansen's *Science* study showing an increase in global mean temperatures along with a concurrent increase in atmospheric CO_2 emissions.[34] Furthermore, in 1985, the Villach Conference convened in Austria to examine impacts of greenhouse gas emissions on the planet. Concurrently, academic research began to interrogate how media representations have fed back into on-going formulations and considerations of environmental problems, issues and themes. [35]

But it was in 1988 when climate science and governance flowed into full public view—by way of these numerous historical tributaries—through large-scale media attention.[36] Media coverage of climate change and global warming increased substantially in Western Europe and North America.[37] Many factors contributed to this rise, and these can be further understood through the primary type or effect of each contribution.

First, there were ecological/meteorological events in the form of a North American heat wave and drought in the summer of 1988, as well as attention-grabbing forest fires in parts of Yellowstone National Park. These concomitant events were thought to sensitise many in the climate science and policy communities, as well as the media and public, to the issue of climate change. As

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33   Fleming, James Roger, *Historical Perspectives on Climate Change* (Oxford, UK: Oxford University Press, 1998).

34   Mazur, Allan, and Jinling Lee, "Sounding the Global Alarm: Environmental Issues in the US National News," *Social Studies of Science* 23.4 (1993): 681–720.

35   Weart, S., *The Discovery of Global Warming* (Cambridge, MA: Harvard University Press, 2003).

36   Carvalho, and Burgess, "Cultural Circuits of Climate Change."

37   Weingart, Peter, Anita Engels, and Petra Pansesgrau, "Risks of Communication: Discourses on Climate Change in Science, Politics, and the Mass Media," *Public Understanding of Science* 9 (2000): 261–83.

Demeritt has posited, "the 1988 heat wave and drought in North America were arguably as influential in fostering public concern as any of the more formal scientific advice".[38]

Second, a number of more *political* events began to emerge at this time. For instance, NASA scientist James Hansen forcefully warned Congress that global warming was a reality. On the Senate floor he stated that he was "99 percent certain" that warmer temperatures were caused by the burning of fossil fuels and that they were not solely a result of natural variation.[39] Moreover—and giving testimony on one of the hottest days of the year—Hansen also asserted that "it is time to stop waffling so much and say that the evidence is pretty strong that the greenhouse effect is here".[40] In the US, the impending presidential election also played a part, as campaign rhetoric became tinged with mentions of climate change and global warming. On the campaign trail that year, then-candidate George H.W. Bush acknowledged the seriousness of global warming, and promised the administration would substantively address the issue.

Third, scientific stories shaped media representational practices. Prominently, 1988 was the year in which the United Nations Environment Program and the WMO created the Intergovernmental Panel on Climate Change (IPCC) in Geneva, Switzerland. Also, the WMO held an international conference called *Our Changing Atmosphere* in Toronto, Canada.[41] At this conference, 300 scientists and policymakers representing 46 countries convened, and from this meeting, participants called upon countries to reduce carbon dioxide emissions by 20 percent or more by 2005.[42]

Together, ecological, political and scientific factors intersected to dynamically bring the issue of climate change clearly onto the public arena.[43] At that time, narratives conformed to journalistic norms and the informational

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38   Demeritt, David, "The Construction of Global Warming and the Politics of Science," *Annals of the Association of American Geographers* 912 (2001): 307.

39   Weisskopf, Michael, "Two Senate Bills Take Aim at 'Greenhouse Effect'," *The Washington Post*, July 29, 1988, A17.

40   Shabecoff, Philip, "Global Warming has Begun, Expert Tells Senate," *The New York Times*, June 24, 1988: A1.

41   Pearce, F., *Turning Up the Heat: Our Perilous Future in the Global Greenhouse* (London: Bodley Head, 1989).

42   Gupta, Joyeeta, *Our Simmering Planet: What To Do About Global Warming?* (New York: Zed Books, 2001).

43   Wynne, Brian, "Scientific Knowledge and the Global Environment," in *Social Theory and the Global Environment*, ed. T. Benton and M. Redclift (London: Routledge, 1994), 169–189; Irwin, Alan, and Wynne Brian, ed., *Misunderstanding Science? The Public Reconstruction of Science and Technology* (Cambridge: Cambridge University Press, 1996).
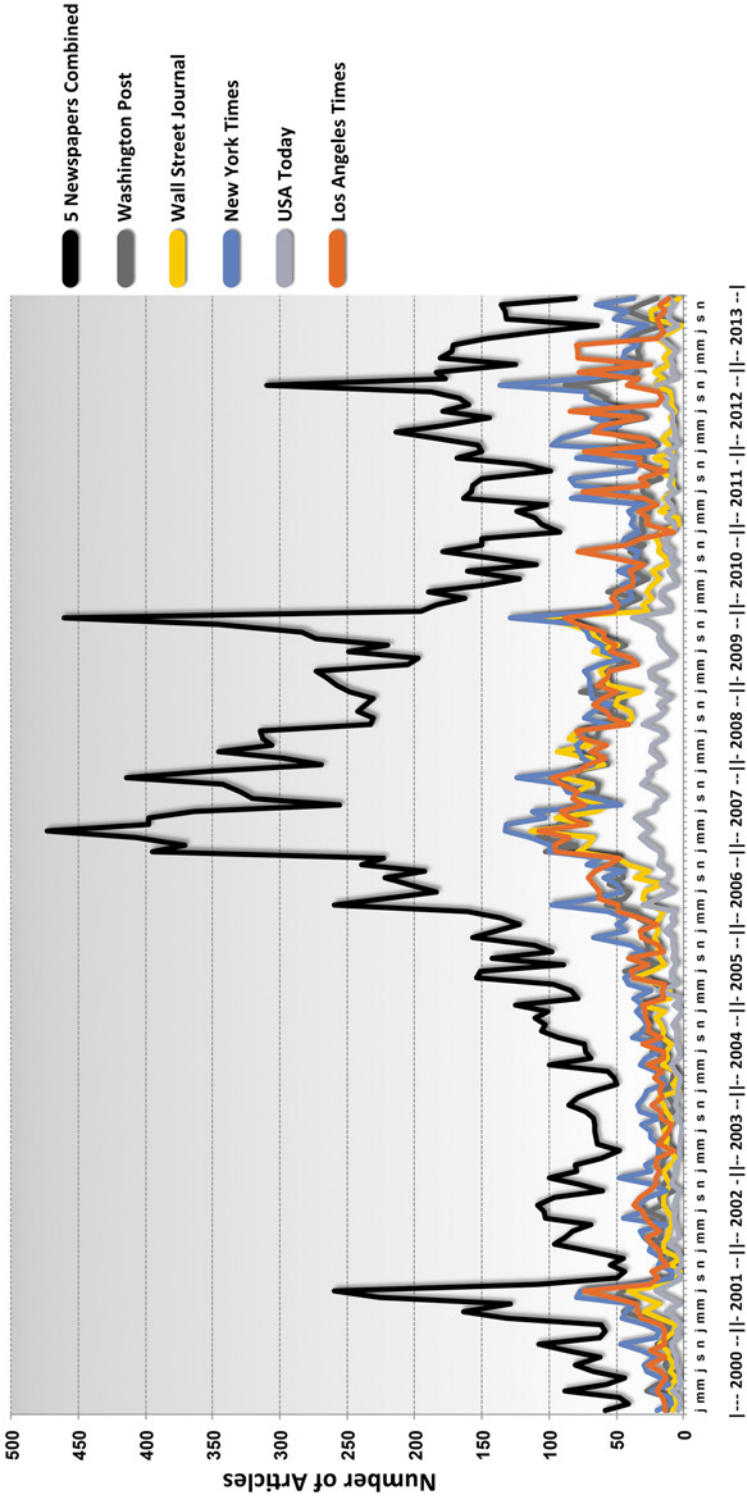
FIGURE 7.1   *US newspaper coverage of climate change/global warming*[44]

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44   Caption: This figure tracks newspaper coverage of climate change or global warming in five newspapers in the United States from January 2000—December 2013). These newspapers are the *Los Angeles Times*, *The New York Times*, *USA Today*, the *Wall Street Journal*, and *The Washington Post*. For monthly updates go to: http://sciencepolicy.colorado.edu/media_coverage/.

predilections of newspaper and television news media. According to Sheldon Ungar, "what rendered 1988 so extraordinary [in terms of the growing profile of climate change issues] was *concatenating* physical impacts *felt* by the person in the street".[45]

To show a more contemporary perspective on climate change coverage in the media, figure one appraises the trends in media coverage of climate change from 2000 into 2013 in newspapers in the US. Generally, stories tracking issues, events and information on 'environmental issues' (of which climate change is a subset) have continued to occupy a small nook in news overall. In other words, relative to other issues like health, medicine, business, crime and government, media attention to climate change remains a mere blip.[46]

Tracking US American media treatment of climate change and global warming through these intersecting *political*, *scientific*, and *ecological/meteorological* climate themes provides a useful framework for analyses of content and context. Such accounting helps then to demonstrate how news pieces should not be treated in isolation from one another; rather, they should be considered connected parts of larger political, economic, social, environmental and cultural conditions. Moreover, patterns revealed in the mobilisations of journalistic norms internal to the news-generation process cohere with externally influenced dominant market-based and utilitarian approaches that consider the spectrum of possible mitigation and adaptation action on climate change. Robert Brulle has argued that an excessive mass media focus merely on the debaters and their claims "works against the large-scale public engagement necessary to enact the far-reaching changes needed to meaningfully address global warming".[47] As such, examinations of the content of US media treatment of climate change, within a context of larger political and social forces, provide useful insights into wider considerations taken up in companion contributions to this volume.

45   Ungar, Sheldon, "The Rise and (Relative) Decline of Global Warming as a Social Problem," *The Sociological Quarterly* 33 (1992): 490.

46   Project for Improved Environmental Coverage (PIEC), *Environmental Coverage in the Mainstream News: We Need More, An Inaugural Ranking Report*, published January 2013, accessed December 14, 2013. http://environmentalcoverage.org/.

47   Brulle, Robert J., "From Environmental Campaigns to Advancing a Public Dialogue: Environmental Communication for Civic Engagement," *Environmental Communication— A Journal of Nature and Culture* 4.1 (2010): 94.

**5   New Forms of Climate Stories? Appraising North American Public
           Sentiment**

The US American 'public citizenry' are actually comprised of complex and het-
erogeneous sets of varied interests, perspectives, beliefs and concerns. None-
theless, in parallel with attempts to track the science, effects and causes of
climate change, over time there have been many efforts undertaken to under-
stand the 'public mood'. Despite its limits, the most readily accessible way to
put one's proverbial finger on the pulse of public sentiment has been through
polling data. However, the explanatory power derived from polling data can be
problematic and potentially tricky to handle.

    Questions regarding public acceptability of various policy tools such as Cap
and Trade or carbon taxation can provide helpful insights into questions of
feasibility and latent public pressure. For example, the *Six Americas* studies
conducted by Ed Maibach, Connie Roser-Renouf, Anthony Leiserowitz and
colleagues have sought to provide greater texture regarding US public views on
numerous climate policy measures and personal actions. Through public poll-
ing since 2005, they have defined six distinct groupings of citizens in the US
with regard to their views and perceptions of the costs and benefits of reducing
fossil fuel consumption and ameliorating the negative impacts of climate
change. Moreover, this polling assesses varied support for different national
climate and energy policies, and appraises the differing beliefs about efficacy
of climate policy decision making. These "Six Americas" are described as
"alarmed", "concerned", "cautious", "disengaged", "doubtful" and "dismissive".
Their polling has provided useful and important insights into how considera-
tions of US perspectives facilitate more tailored and effective messaging on
climate and energy issues. Furthermore, these approaches help to more capa-
bly consider how issues such as how religion, ideology and gender permeate
support (or lack of support) for climate action, as well as related issues such as
energy efficiency improvement measures.[48]

    Yet pitfalls arise when science-based evidentiary questions are put on the
same platform. In other words, it is fundamentally problematic when pollsters
reduce expert based science questions to the same domain as vox populi opin-
ions or beliefs. For example, a February 2010 BBC/Populus poll posed the ques-
tion, "From what you know and have heard, do you think that the Earth's
climate is changing and global warming is taking place?" Such a question in-
vites opinion through a range of ways, from whether a respondent may wish it

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48   Maibach, Edward, Connie Roser-Renouf, and Anthony Leiserowitz, *Global Warming's Six
      Americas: An Audience Segmentation Analysis*, Yale Project on Climate Change and George
      Mason University, 2012.

was not taking place to whether someone on the street or in mass media told them that it was not happening. Such a way of approaching the issue then privileges opinion at the expense of valuing relevant expert research and authority.

In the context of newsroom cuts and shrinking funds for investigative journalism, an increase in the percentage of stories on climate change devoted to polling data can be anecdotally observed. Poll results readily provide an appealing news hook into making sense of public views and sentiments in the complex issues associated with climate change and require little investigative work to assemble. Polls can indeed provide utility in terms of gauging possible public support for various policy actions on climate change. Yet, along with these trends comes the risk of reducing issues of expert-based scientific understanding to that of mere opinion. More to the point, however, polling agencies exhibit recklessness through such approaches, particularly when understaffed news agencies pick up their findings at face value in order to file a story on an ever-tightening deadline. While getting their latest polls picked up in the press may translate to commercial success, this carries the risk of giving potentially mistaken impressions of public sentiments in the US and elsewhere. Overall, as John Wihbey has put it, "Public opinion polls and surveys are attention getters, headline grabbers. Reporters and editors love them. Sometimes they should learn to hate them [...] or at least to approach each one with a healthy dose of skepticism".[49] Nowhere is this more the case than in the context of climate change, reporting and mass media coverage of politics and policy activities.

6   Conclusions

The road from information acquisition via mass media to various forms of engagement and action is far from straightforward and is filled with turns, potholes and intersections. This is a complex arena: mass media portrayals do not *simply* translate truths or truth-claims nor do they fill knowledge gaps for citizens and policy actors to make 'the right choices'. Moreover, media representations clearly do not dictate particular behavioural responses. For example, research by O'Neill et al. has shown that fear-inducing and catastrophic tones in climate change stories can inspire feelings of paralysis through powerlessness and disbelief rather than motivation and engagement. In addition,

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49   Wihbey, John, "Polls and Surveys Grab Media Headlines: But Beware Polling Pitfalls on Climate Change," published by Yale Forum on Climate Change and the Media, June 16, 2009.

they found that imagery connected with climate change influences saliency (that climate change is important) and efficacy (that one can do something about climate change) in complex ways amidst the US public.[50] Among their results, they found that imagery of climate impacts promoted feelings of salience, but undermined self-efficacy, while imagery of energy futures imagery promoted efficacy. Overall, media portrayals continue to influence—in non-linear and dynamic ways—individual to community- and international-level perceptions of climate science and governance.[51] In other words, mass media have constituted key interventions in shaping the variegated, politicised terrain within which people perceive, understand and engage with climate science and policy.[52]

Moreover, financial and political interests continue to shape these representations. Their influences can be traced back to asymmetrical power derived from control over the means of production since the 18th century Industrial Revolution. Contemporary examples trace paths through issues involving corporate control, intersecting interests with carbon-based groups, and particular stances and perspectives. An oft-cited example is Fox News (a holding of Rupert Murdoch's News Corporation), a US-based outlet known for its contrarian positions on climate science and decision-making.

Mass media comprise a community where climate science, policy and politics can readily be addressed, analysed and discussed. The way that these issues are covered in media can have far-reaching consequences in terms of ongoing climate scientific inquiry as well as policy activities and public perceptions, understanding and potential engagement. In this contemporary environment, numerous 'actors' compete in these media landscapes to influence decision making and policy prioritisation at many scales of governance. Multitudinous ways of knowing—both challenged and supported through media depictions—shape on-going discourses and imaginaries, circulating in various cultural and political contexts and scales. Furthermore, varying media representational practices contribute—amid a complex web of factors—to divergent perceptions, priorities and behaviours.

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50   O'Neill, Saffron et al., "On the Use of Imagery for Climate Change Engagement," *Global Environmental Change* 23.2 (2013): 413–421. doi.org/10.1016/j.gloenvcha.2012.11.006.

51   Wilby, Peter, "In Dangerous Denial," *The Guardian*, June 30, 2008, 9.

52   Krosnick, Jon A. et al., "The Origins and Consequences of Democratic Citizens' Policy Agendas: A Study of Popular Concern About Global Warming," *Climatic Change* 77.1 (2006): 7–43; Goodman, Michael, and Emily Boyd, "A Social Life for Carbon?: Commodification, Markets and Care," *The Geographical Journal* 177.2 (2011): 102–109.

More media coverage of climate change—even supremely fair and accurate portrayals—is not a panacea. In fact, increased media attention to the issue often unearths more questions to be answered and greater scientific understanding actually can contribute to a greater supply of knowledge from which to develop and argue varying interpretations of that science.[53] At best, media reporting helps address, analyse and discuss the issues, *but not answer them*. And dynamic interactions of multiple scales and dimensions of power critically contribute to how climate change is portrayed in North American media. As we have detailed above, mass media representations arise through large-scale (or *macro*) relations, such as decision making in a capitalist or state-controlled political economy and individual-level (or *micro*) processes such as everyday journalistic practices as well as, now, the use of polling data. This contribution seeks to help readers of this volume work through some of the key cultural dimensions of climate change in the US context. Through this contribution, we have sought to lay some groundwork for readers to then pursue these issues in more detail, as contexts and conditions change going forward into this, the 21st 'climate changed' century of the Anthropocene.

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53   Sarewitz, Daniel, "How Science Makes Environmental Controversies Worse," *Environmental Science and Policy* 7 (2004): 385–403.

"Save Ga\$. Ride this Bus": Racialised Poverty, Violence and Climate Change in Urban America

Jürgen Heinrichs

Abstract

This project examines the relationship between poverty, violence, race relations and environmental change in the United States today. Focusing on a bus line in Newark, New Jersey, this essay evokes the experience of riding a bus as a platform for studying a host of social and political conflicts that presently unfold in American society. Campaigns prompting people to switch from individual (car) to shared (bus) modes of transportation as a means to avert climate change often mask underlying class divisions and racialised poverty. Engaging the inextricable histories of race, mobility and economic inequality, this essay employs art history and cultural studies to chart how public transportation continues to function as a space in which social and political conflict unfolds.

1 Mass Transit, Poverty and Violence

In 1997, a Newark city bus became the site of yet another bloody episode in a town already plagued by violence. Passenger complaints about a radio playing loud music prompted an argument. A scuffle ensued. Shots rang out on board the crowded vehicle. Two passengers, both uninvolved bystanders, were wounded as the shooter escaped the bus. One victim recovered. Another young man sustained critical injuries that rendered him a paraplegic for life.[1]

The bus shooting is but one example of how violent crime has troubled the largest and most populous city of New Jersey, nicknamed the "Garden State" in reference to its historic role as a supplier of agricultural products to neighbouring New York City and Philadelphia.[2] Contrasting with the bucolic

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1 Feuer, Alan, "New Jersey Daily Briefing: Two Shot on Bus in Newark," *New York Times*, October 22, 1997, accessed May 21, 2014. http://www.nytimes.com/1997/10/22/nyregion/new-jersey-daily-briefing-two-shot-on-bus-in-newark.html.

2 Prominent attorney Abraham Browning of Camden, New Jersey is reported to have coined the term "Garden State" while speaking at the Philadelphia Centennial exhibition on New

connotations of the state's nineteenth-century moniker, Newark today hardly evokes associations of rustic farms and tranquil country life. Companies and businesses abandoned the city in the wake of the 1967 riots. As a result, Newark struggled with capital flight, economic devastation and high unemployment. The city subsequently joined the plight of other post-industrial American cities that experience abject poverty, urban blight and rampant crime. Despite signs of economic recovery and urban renewal in recent years, crime is on the rise. The recent murder of a 17-year old girl already marked the city's 43rd homicide victim only half way into the year, compared with 65 murders in 2008. A local newspaper reports that residents "offered the familiar lament of living in a city where gangs, guns, drugs and poverty conspire against a decent quality of life".[3] Capturing how residents experience this latest spate of violence, a 20-year old woman shares that

> [gunshots] [...] claimed one of her friends from West Side High School shortly before graduation. Down the street from her grandfather's home, a 13-year-old boy was shot dead on South Orange Avenue in 2011. "I worry about being a victim," [...] "I don't affiliate with people who might get in a jam, but the way things are happening now—wrong place, wrong time—I don't feel safe."[4]

Crime in Newark has left its people on edge as they grasp that violence is not restricted to the activities of drug dealers and street gangs but that it could erupt any time and anywhere, even aboard buses, one of the most public spaces.

Many Newark residents rely on buses for their transportation needs. In fact, the greater metropolitan area of New York, New Jersey and Connecticut

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Jersey Day (August 24, 1876). Browning described "our Garden State" as "an immense barrel, filled with good things to eat and open at both ends, with Pennsylvanians grabbing from one end and New Yorkers from the other". Benjamin Franklin also has been associated with naming the Garden State. State of New Jersey, "Nickname," accessed May 21, 2014. http://wxww.state.nj.us/nj/about/facts/nickname/.

3   Mueller, Mark, "Voices from the Street: Newark's Residents Describe Fear of Violence in Wake of Teen's Killing," *The Star-Ledger*, July 6, 2014, accessed May 21, 2014. http://www.nj.com/essex/index.ssf/2014/07/voices_from_the_street_newark_residents_describe_fears_of_violence_in_wake_of_teens_killing.html.

4   Ibid.

FIGURE 8.1   *Newark city bus*[5]

registers the highest numbers of transit ridership with some 30 percent of rides
to and from work taking place on buses.[6] Most city buses are owned and oper-
ated by New Jersey Transit, the statewide public transportation system and the
nation's third-largest mass transit provider. Private carriers run additional bus
lines to meet the demand for transportation in this densely populated city.
One such bus makes its scheduled stops along South Orange Avenue in the
city's West Ward.

Attentive bus passengers on this line notice a host of surprising sights and
sites of cultural and historical significance. Describing the urban landscape
that passengers observe as they ride this bus through the streets of Newark,
this essay ponders the nexus of racialised poverty, street violence and climate
change in the United States today. Focusing on this inconspicuous bus line and
the observations of passengers riding this bus, my project revisits a series of

5   Photo © Jürgen Heinrichs, January 2014.

6   United States Department of Transportation, Bureau of Transportation Statistics, "Table 4-3:
    Transit Ridership in the 50 Largest Urbanized Areas: 2010 and 2011," accessed May 21, 2014,
    http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/state_transportation_sta-
    tistics/state_transportation_statistics_2013/index.html/chapter4/table4_3.

recurrent conflicts that nowadays unfold in American inner cities. The rise of poverty and the profusion of firearms have caused a wave of violence that occurs on streets, buses and trains. Studying the appearance of this bus and its associated stories, my analysis probes the dynamics of poverty, race relations and climate change in the United States. Serving as a prism through which to examine the different facets of the present historical moment, the bus and its related discourse exemplify how the collective American imagination habitually conflates environmental concerns with anxieties over class status and racial mingling. I argue that the widely accepted link between carbon emissions and climate change, evident in calls to shift from individual (car) to shared (bus) modes of transportation, frequently masks underlying, yet unacknowledged constellations of economic inequality, class divisions and the effects of racialised poverty. Put another way, it may not be as easy as the motto suggests to save gas by switching to public transportation for a people who may not own cars in the first place, who ride public transportation out of necessity rather than by choice and who may be unable to afford and partake in suburban lifestyles deemed safer than inner-city life. Looking at the bus as a utility of everyday life and as a trope in cultural history, this essay draws from art history and cultural studies to reconsider the relationship between anthropogenic climate change, class status and race relations in 21st-century America.

2   Storefront Ministries and Ghetto Fabulous

Absorbing the sights along South Orange Avenue, bus passengers register the abiding power of black spirituality and religion as evidenced in numerous storefront churches, holiness temples and mosques. In his study of the American religious landscape, cultural geographer Wilbur Zelinsky identifies the number, variety and ubiquity of religious institutions as a well-defined cultural and historical phenomenon that is germane to the United States:

> We have a kind of palimpsest in many urban neighbourhoods, one in which the spectral geography of vanished, or vanishing, ethnic, racial, and denominational groups can still be deciphered beneath that of their latter-day successors.[7]

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7   Zelinsky, Wilbur, "The Uniqueness of the American Religious Landscape," *Geographical Review* 91.9 (July 2001): 569–570.

South Orange Avenue features an especially rich variety of storefront churches housed in former stores, warehouses, churches, synagogues, movie theatres and other structures. The sheer number of these houses of worship and the range of denominations that they represent speaks to their past and present significance as sources of social and spiritual support for their constituencies. Emulating the appearance of larger, more representative buildings on a reduced scale and with simplified stylistic vocabularies, these churches frequently incorporate stylised pointed arches to evoke Gothic cathedrals, whereas illuminated crosses and other religious symbols convey institutional profiles to potential worshippers.

The abundance of storefront churches and holiness temples on South Orange Avenue also points to the historical function of religious institutions in African American life and society. As sociologist Robert Boyd describes the emergence of such ministries during the early twentieth-century Great Migration,

> African Americans from the South brought to the urban North a demand for religious services that were traditional, emotional and intimate. The old-line churches of northern African American communities failed to satisfy these demands. Hence, a niche arose for those African Americans who were willing and able to start churches that could accommodate the religious demands of southern migrants. This niche was relatively easy to enter, and it offered reasonable rewards to its occupants. It was also an important source of support to many African Americans.[8]

Fellow sociologist William J. Wilson even proposes that such institutions deliberately upheld conventional norms that functioned as 'social buffers' to ameliorate the effects of joblessness and poverty.[9] Given the area's high rate of poverty, unemployment and violence, Wilson's assessment of the affirmative function of religious institutions certainly remains valid today.

The storefront churches on South Orange Avenue differentiate themselves from one another through variations of their architectural appearances and their names. Expressing the vitality and imagination of their congregations, the names run the gamut of references from biblical figures, names and places to associations with the life of Christ. The plethora of church names on

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8 Boyd, Robert L., "The Storefront Church Ministry in African American Communities of the Urban North during the Great Migration," *Social Science Journal* 35, 3 (1998): 319.

9 Wilson, Julius W., The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy (Chicago: University of Chicago Press, 1987), 56.

Newark's South Orange Avenue suggests that Robert Noreen's pioneering 1965 study of the names of Chicago storefront churches has not lost its relevance when he states:

> These many examples reveal how expressive and imaginative are the names of storefront churches. [...] Most unlike traditional church names, many storefronts freely express the immediate hopes and desires of their congregations for a better world—even though that "world" may never be reached until heaven is gained.[10]

Then, there is Ghetto Fabulous, a now defunct retail store that featured an assortment of urban clothing.[11] Presently a substation of the Newark Police Department, the former store and its provocative name once added another layer of meaning to South Orange Avenue seen as a cultural and historical text. In humour and self-reflexion, the name comments upon the district's reputation as an impoverished yet stylish quarter of the city. The phrase wittily references an inventory of clothes whose style has been characterised as one "of nouveau riche people who have grown up in ghetto or urban areas" and reflects the "combination of bad taste, an urban aesthetic and desire to wear one's wealth".[12] As with other instances in which formerly subjugated groups embrace and appropriate disparaging language that was traditionally used as a vehicle to discriminate against them, the idiom "Ghetto Fabulous" playfully signals empowerment and pride. In the vein of Susan Sontag's influential definition of camp as an aesthetic that celebrates artifice, irony and stylisation, the phrase simultaneously acknowledges and counters pervasive cultural and racial stereotypes.[13] Media studies scholar Roopali Mukherjee offers a still different reading of this cultural phenomenon as "the contemporary proclamations of the black American Dream epitomised by the hyper-consumerist excesses of

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10   Noreen, Robert G., "Ghetto Worship: A Study of Names of Chicago Storefront Churches," *Names* 13.1 (1965): 29.

11   The former "Ghetto Fabulous" store can be seen in an October 2007 capture of Google Street View, accessed May 21, 2014. https://www.google.com/maps/@40.74507,-74.218784, 3a,75y,172.97h,84.05t/data=!3m4!1e1!3m2!1srQufhX3f2FRzFVhof_UdUA!2e0.

12   Urban Dictionary, "Ghetto Fabulous," accessed May 21, 2014. http://www.urbandictionary. com/define.php?term=ghetto%20fabulous.

13   Sontag, Susan, "Notes on 'Camp,'" In *Against Interpretation and Other Essays* by Susan Sontag, 275–292 (New York: Farrar, Straus & Giroux, 1966), 279.

Ghetto Fabulous 'bling'."[14] Addressing the roots of this phenomenon, she posits:

> The historical record of white ridicule and racist violence directed at black prosperity especially when it was greater than their own, is one indication of the ways that black access to material goods destabilised the racial logics of white superiority and black inferiority.[15]

Supplementing one another, the different interpretations of the Ghetto Fabulous aesthetic present the former Newark retail store in a fresh perspective that highlights the interplay of consumption, race and history.

3   Cemeteries, Land Use and Environmental Change

Yet, of all historical traces that present themselves to perceptive bus passengers traversing Newark's West Ward today, the cemeteries most profoundly bespeak bygone eras and the district's former residents. Newark's once representative Fairmount, Holy Sepulchre and Hebrew cemeteries are now mere shadows of their former selves. As vestiges of the Victorian era, some of these graveyards feature crumbling markers and collapsing mausoleums that still reflect the area's once predominant Irish, Italian, German and Jewish immigrant populations. The descendants of the communities that formerly buried their family members and visited their graves have since moved on to suburban settings or have died themselves. Generations later, these burial grounds remain unattended and have fallen into disarray.

Following the 1967 Newark riots, 'white flight' set in with its large-scale migration of whites to the suburbs, a demographic shift that, in turn, paved the way for the influx of black Americans and, more recently, immigrants from Caribbean and African points of origin.[16] Newark's deteriorating cemeteries are powerful reminders of these demographic shifts. While the graveyards or parts thereof still accept interments, some sites have reached capacity or they

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14   Mukherjee, Roopali, "Bling Fling: Commodity Consumption and the Politics of the Post-Racial," in *Critical Rhetorics of Race*, ed. Michael G. Lacy and Kent A. Ono (New York: New York University Press, 2011), 181.

15   Mukherjee, "Bling Fling," 183.

16   Mumford, Kevin, *Newark: A History of Race, Rights, and Riots in America* (New York: New York University Press, 2007), 3. Also, see Porambo, Ronald, *No Cause for Indictment: An Autopsy of Newark* (New York: Holt, Rinehart and Winston, 1971).

are no longer considered for burials. Headstones have been toppled and mausoleums are collapsing due to a lack of care and maintenance. In his study of American cemeteries and memorials, cultural geographer David Lowenthal observes that "the cemetery takes on secondary historical characteristics. […] No longer just a set of monuments to the departed, the cemetery becomes a relic in its own right".[17]

The Jewish cemeteries of Newark—many of them located alongside or in close vicinity to South Orange Avenue—present well-studied examples of the phenomenon Lowenthal describes. With their unattended graves and dilapidated monuments, these burial grounds symbolise the transience of ethnic communities and their once lively cultures. Like nearby Catholic cemeteries that have equally fallen into disrepair, Jewish graveyards in various stages of dereliction bespeak the bygone vibrancy of the communities that maintained them. Andrew Jacobs offers a haunting account of the afterlife of Newark's Jewish burial grounds. Once boasting nearly 100 such sites, many today have become "monuments to vandalism and neglect".[18] Although the author acknowledges that America is strewn with abandoned cemeteries, he notes that "few [are] as ravaged as those in Newark". Describing one such "crowded" cemetery, "hard by the Garden State Parkway" and bordered by South Orange Avenue and Grove Street, Jacobs recalls the impression of looking around from the site of a vandalised gravesite commemorating the untimely death of a 21-year old man in 1925: "Spreading out from his narrow plot in every direction is a landscape of chilling desecration. Photographs obliterated, headstones toppled and bronze memorial plaques ripped out, perhaps to be sold as scrap."[19] Newark's cemeteries and the vanished communities that they commemorate demonstrate that these sites, once embedded in people's everyday lives and culture, have been cut off from their living contexts. For David Mallach of the New Jersey-based Jewish Federation of Greater MetroWest, Newark's abandoned cemeteries even represent "a typical American story" in which "[e]veryone scatters and disperses and only the cemeteries are left".[20]

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17   Lowenthal, David, "Age and Artifact: Dilemmas of Appreciation," in *The Interpretation of Ordinary Landscapes: Geographical Essays*, ed. Donald W. Meinig (New York: Oxford University Press, 1979), 123.

18   Jacobs, Andrew, "Jewish Newark's Urban Pioneers Rest Uneasily: The Dead, Left Behind in the Suburban Diaspora, Lay Amid a Landscape of Ravaged Monuments," *New York Times*, October 15, 2000, accessed May 21, 2014. http://www.nytimes.com/2000/10/15/nyregion/jewish-newark-s-urban-pioneers-rest-uneasily-dead-left-behind-suburban-diaspora.html.

19   Ibid.

20   Ibid.

Passing Newark's forgotten burial grounds may prompt inclined bus passengers to ponder broader questions about cemeteries, land use and environmental change. The city's older cemeteries thus may have already experienced a process that still awaits other such sites in the future. At a time when family ties loosen, religious traditions fade and populations become ever more mobile, burial practices and cemeteries, by extension, have become the subject of family conversations and public discussions. People often no longer live in one place for their lifetimes or for generations so that maintaining gravesites has become difficult. Moreover, a growing sense of the scarcity of open land even in large surface nations like the United States has called into question the practice of maintaining final resting places in perpetuity. While permanent gravesites remain common in the United States, other countries reuse grave plots after periods of 15 to 25 years. Foregoing mortuary procedures such as the embalming of bodies and burials in caskets made of durable materials, the re-use of graves rests on the observation that human remains decay to humus within such time frames.[21] In the United States, such recycling of graves would likely be viewed as a desecration. However, the evolving debate on the subject points to the environmental cost of traditional interments and calls for 'green burials'. According to Greensprings Natural Cemetery in Newfield, New York, which is one of only five natural burial grounds in the United States as of 2008,

> the average U.S. cemetery buries roughly 9,343 litres of embalming fluid, 219 tonnes of steel and 42,333 metres of high-quality wood used in caskets in a single hectare, whereas a body wrapped in a shroud or contained in a plain wood box decomposes quickly, leaves behind few pollutants and thus helps create new life.[22]

Others even view Western burial rites as an "expensive relic of 19th-century habit" that poses threats to the environment and public health:

> The last big innovation was cremation, which is now under fire for its environmental costs. A study conducted in 2007 for Centennial Park, a cemetery in Australia, found cremations produce the equivalent of 160kg of CO_2 per body. A cemetery burial emits a mere 39kg. But maintenance

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21   Thadeusz, Frank, "Germany's Tired Graveyards: A Rotten Way to Go?" *Spiegel Online International*, January 7, 2008, accessed May 21, 2014. http://www.spiegel.de/international/germany/germany-s-tired-graveyards-a-rotten-way-to-go-a-527134.html.

22   McCausland, Janet, "Burial Out of the Box," *Alternatives Journal* 34.1 (January 2008), 6.

(mowing lawns and the like) makes the ultimate carbon footprint of bur-ial bigger than cremation.[23]

Cemeteries may further jeopardise public health by polluting air and ground water through chemicals used in mortuaries. Exploring the history and use of formaldehyde in the American funeral industry, Jeremiah and Ted Chiapelli chart how this hazardous substance passes into the soil, ground water and at-mosphere through burials and cremations. A toxic and proven carcinogenic substance, formaldehyde, especially in trace amounts, eventually reaches drinking water supplies and the atmosphere. Although the dangers of formal-dehyde to public health are well known, the embalming of bodies continues unabatedly. Debunking common misconceptions about the supposed need for embalming with historical and scientific evidence, the authors trace this wide-spread practice in the United States from its origins in the American Civil War to the present. They counter claims of embalming as a sanitary requirement to avoid the spread of disease or as a psychological necessity to aid the mourning process through the aesthetic presentation of bodies. Instead, the persistence of embalming is driven, they argue, by the American funeral industry, which, in 2002, was estimated to be a $13 billion-a-year business.[24]

Regardless of whether the ride-by impressions of Newark's forlorn grave-yards prompt bus passengers to contemplate the impact of cemeteries on en-vironmental pollution, climate change and the future of land use, the sense of gloom emanating from these sites is not lost on any observer. Torn fences and ornate metal gates, nowadays permanently flung open, grant passers-by unset-tling glimpses of these graveyards. To be sure, Jacobs's account of Newark's for-gotten Jewish cemeteries nevertheless concludes on a more optimistic note as he mentions the activities of a newly founded Jewish citizens' movement from suburban towns that annually invites families and mourners to the cemeteries so they can visit family graves on an afternoon before the Jewish High Holy Days. Yet, even these efforts to breathe new life into an old tradition nowa-days occur with police protection. Reported muggings and the area's high rate of crime have prompted calls for police to escort families and mourners on this special day of remembrance.[25] Moreover, Jacobs's description of these

23   Anonymous, "Exit Strategies: Green Funerals," *Economist*, September 16, 2010, 74, accessed May 21, 2014. http://www.economist.com/node/17043348.

24   Chiapelli, Jeremiah, and Ted Chiapelli, "Drinking Grandma: The Problem of Embalming," *Journal of Environmental Health* 71.5 (2008): 24.

25   Chen, David W., "Returning to Newark to Remember the Dead," *New York Times*, Septem-ber 15, 1996, accessed May 21, 2014. http://www.nytimes.com/1996/09/15/nyregion/return ing-to-newark-to-remember-the-dead.html.

cemeteries as "landscapes of chilling desecration"[26] tacitly acknowledges the associated devastation of their surrounding neighbourhoods and the lives of a population mired in runaway poverty and violent crime.

4   Buses as Stages for Conflict, Resistance and Violence

The aforementioned 1997 shooting on Newark's city bus is but one of a long series of such crimes committed in the proverbial "broad daylight". The incident suggests that unlawful transgressions no longer unfold under cover of darkness but brazenly play out in the public eye. Buses and bus stops in Newark and other American cities have increasingly become the sites of spectacularly violent crimes. Over the years, Newark alone saw its share of shootings and stabbings that occurred on buses or at bus stops. Some of the most egregious and highly publicised incidents include the fatal stabbing of a 15-year old girl in an apparent hate crime at a Newark bus stop in 2003.[27] Two years later, a young man died after being hit by several bullets on a Newark city bus as horrified passengers looked on.[28] In 2013, a 14-year old girl died when her 19-year old assailant fired several rounds of ammunition into the side of a city bus in nearby Queens, New York.[29] Still more recently, a man succumbed to gunshot wounds to the head on a crowded bus during rush hour in Brooklyn. The victim, a 39-year old father of two, was on his way home from work when he was randomly caught in the crossfire. The 14-year old shooter and other youths belonging to rivalling street gangs had abruptly exchanged gunfire on board the bus. Such rampages on public transportation are too numerous to count, yet each time they occur, the seeming normalcy of contemporary American society unravels as lives are shattered in the wake of targeted killings or through eruptions of arbitrary violence.

Together with reports of rising assaults on bus drivers, the stream of news stories about mass transit shootings and the random victimisation of

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26   Jacobs, "Urban Pioneers."

27   Smothers, Ronald, "Teenage Girl Fatally Stabbed at a Bus Stop in Newark," *New York Times*, May 13, 2004, accessed May 21, 2014. http://www.nytimes.com/2003/05/13/nyregion/teen-age-girl-fatally-stabbed-at-a-bus-stop-in-newark.html.

28   "Shooting on Newark Bus Leaves Man Dead," *New York Times*, Feburary 26, 2005, accessed May 21, 2014. http://www.nytimes.com/2005/02/26/nyregion/26bus.html.

29   Goodman, J. David, "Man Arrested in South Carolina Over Killing on Queens Bus," *New York Times*, June 4, 2013, accessed May 21, 2014. http://www.nytimes.com/2013/06/05/nyregion/suspect-in-shooting-death-of-girl-on-queens-bus-is-caught.html.

bystanders fuels public fears for these incidents suggest that the assumption of "safety in numbers" is failing. People realise that close proximity to one another in public spaces may no longer yield protection. Buses prove particularly vulnerable as people depend on them. At the same time, their narrowly confined cabins require passengers to gather close to one another, leaving them, for better or worse, exposed to the actions and behaviours of strangers. One of the most infamous shootings on public transportation in recent American memory came to be known as the 1993 "Long Island Railroad Massacre". The gunman, a Jamaican immigrant, had randomly opened fire on board a crowded commuter train that left six people dead and nineteen wounded. Even two decades and countless mass shootings later, the slayings still stand out as one of the nation's worst such crimes. Criminologist James Alan Fox emphasises that "[i]n a mall or a school or a movie theater", there is at least some opportunity for "hiding or escaping", whereas the commuters on board the railcar "had nowhere to go".[30] Investigations of the killings explored whether the actions of the convicted killer, at least in part, were fuelled by a history of conflict and discrimination in the assailant's biography during which he came to experience himself as a marginalised and excluded racial other. This racialisation of the gunman since his arrival in the United States as a young man from his native Jamaica was cited by some observers as a potential factor contributing to the murders he later committed.[31]

My work also responds to transport historian Cotton Seiler who called on scholars to counteract the paucity of knowledge about the historical relationship between race and mobility. As Seiler puts it, "the history of modern transport is inextricable from a history of race".[32] While much scholarly attention has focused on the significance of race in housing and employment, the dynamics of interracial encounters on public transportation have not yet been

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30 Anonymous, "20 Years Later: Long Island Rail Road Shooting Remembered as Day Killer Colin Ferguson Went Off the Rails," *New York Daily News*, December 6, 2013, accessed May 21, 2014. http://www.nydailynews.com/new-york/lirr-bloodbath-remembered-20-years-article-1.1539603.

31 William Kunstler and Ron Kuby, Ferguson's initial team of attorneys had proposed a defense of insanity based on the notion "black rage", caused by "years of exposure to white racism". Ferguson had come from a privileged Jamaican background and it was only until his arrival in the United States with its different racial dynamics that he came to experience himself as a negated subject based on his blackness. See David J. Langum, William M. Kunstler: *The Most Hated Lawyer in America*, (New York: New York University Press, 1999).

32 Seiler, Cotton, "The Significance of Race to Transport History," *Journal of Transport History* 28.2 (2007): 310.

adequately studied. A turning point towards understanding the role of race relations in the history of transportation and mobility occurred with historian Robin Kelley, who deciphers buses and streetcars as "moving theatres" of 20th-century black working class resistance. Studying what he views as "racial dramas" unfolding on buses in Birmingham, Alabama during World War II, Kelley describes how Black Americans utilised public transportation as a space of resistance to segregation and racial humiliation. These workers, Kelley argues, employed everyday actions such as loud talking, joking and cursing as invisible forms of political action that turned buses into flashpoints of conflict and resistance.[33] Complementing Kelley's research on interracial contact and conflict on southern buses, the work of fellow historian Sarah Frohardt-Lane uncovers the mid-century racial undercurrents on buses in northern cities like Detroit. "In de facto segregated cities such as Detroit," she explains, "public transportation was one of the few spaces in which blacks and whites routinely encountered one another."[34] The author describes how buses and streetcars in an already overburdened Detroit transit system became sites of racial violence as blacks and whites expressed their frustration with each other aboard transit vehicles. "In fact, buses and streetcars were primary sites of racial violence in the city. Nearly every day, minor annoyances blossomed into arguments, scuffles, or violence."[35]

The research presented by Kelley and Frohardt-Lane registers a fresh interest in how the study of racial contact correlates with the history of transportation in the United States and elsewhere. In the same vein, Seiler reminds scholars of mobility to account for "the always raced identity of the traveler/passenger/driver" along with the ways in which the "'scientific' notion of race crafted in the nineteenth century underwrote the imperial expansionism, which brought about the revolution in modern transport". Seiler reiterates that "self-directed mobility signifies freedom and self-transformation". Therefore, "regimes of white supremacy have sought to police the movement of racial Others" because the latter "tended to be characterised as threatening to a social order based on spatial, cultural, and biological segregation of the fictive categories known as races".[36] On the upside, Seiler acknowledges that

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33   Kelley, Robin, *Race Rebels: Culture, Politics, and the Black Working Class* (New York: Free Press, 1994), 33.

34   Frohardt-Lane, Sarah, "Close Encounters: Interracial Contact and Conflict on Detroit's Public Transit in World War II," *Journal of Transport History* 33.2 (2012): 212.

35   Ibid., 14.

36   Seiler, "Significance," 307.

some scientists and literary scholars have begun to explore the relation-
ships between racialised power and the prerogatives of local, regional,
national, and global mobility, producing theoretically informed analyses
of the 'politics of mobility' through the lens of literary, aesthetic, legal
and historical texts.[37]

This essay contributes to this growing body of knowledge about the link be-
tween mobility, poverty, violence and race relations.

5   Close-Up: Newark City Bus

"SAVE GA$. Ride this Bus", reads the motto that nowadays greets pedestrians
and motorists in the streets of Newark. The slogan spans both sides of a white
bus that links the city's western districts with its bustling downtown, an area in
which traffic is frequently slowed down by the busy commotions at the inter-
section of Broad and Market Streets. Abuzz with pedestrians, cars, buses and
trucks in the midst of an open-air market atmosphere, this city hub features
street vendors offering goods of all kinds. Sometimes barely moving in bum-
per-to-bumper traffic, the bus frequently idles in traffic at this lively downtown
crossing. While stuck on the bus in such jams, passengers' attention is involun-
tarily drawn to the happenings on the busy sidewalks.

    The experience of gazing at street life from the window of a bus evokes the
influential 1958 photobook "From the Bus" by Swiss American photographer
Robert Frank.[38] The series features snapshots of people on New York City
streets and sidewalks that the photographer took with his handheld Leica
camera while riding the bus during the summer of 1958. One of the works de-
picts people walking or standing on the busy sidewalk of a New York City
street.

    The shot's slight downward angle and the camera's distance to its subjects
confirms that it must have been taken from the window of a passing bus. The
curb, diagonally visible in the lower left foreground, aligns with the row of
storefronts and building entrances in the background. Set against the tableau
of display windows and store signs, the broad sidewalk resembles a stage for a
dozen or so pedestrians as they walk, stand or engage each other. Some appear

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37   Ibid., 309.
38   See the photography by Robert Frank, "From the Bus," 1958, gelatin silver print, Metro-
      politan Museum of Art, New York, accessed May 21, 2014. http://www.metmuseum.org/
      collection/the-collection-online/search/296353.

to be passing strangers. Others converse with acquaintances or colleagues. In the right foreground, a middle-aged man directly looks at the camera, as does a young man leaning with his back against a display window in the left background. Both men smoke, as do four African American men, perhaps on break from work, who can be seen conversing near a building entrance. The range of retailers, including a radio shop, a shoeshine parlour and a book and magazine store, suggests that it is not a posh part of the city. Some pedestrians are pacing swiftly towards their destination. Others resemble twentieth-century American embodiments of the *flâneur* strolling down the sidewalk while exploring the city. Figures move in different paths: in both directions of the sidewalk, facing the storefronts or turning toward the camera and passing traffic. The camera appears to capture and freeze instances of ordinary city life. However, a closer look at this photograph reveals peculiar details. For instance, all figures are male, whereas women seem entirely absent from this view. The scene also registers a striking variation of body types and clothes. In the foreground, a man facing the street has just turned back around to his left. His loosened tie and awkwardly positioned right arm contrast with the upright appearance of a tall young man in black business suit who briskly strides into the opposite direction. Examination of this seemingly random street scene yields a plethora of details and potential stories. Accordingly, Steffen Siegel, historian of photography, describes Frank's shots as the kind of images that were not simply taken by a photographer but rather as images that "sought out" their own photographer. And yet, Siegel notes, all such seemingly cursory glances out of the bus window nevertheless remain guided and controlled by the photographer's critical eye and ordering hand.[39] As in other examples of Robert Frank's photography, ordinary street scenes turn into complex but subtle statements about class, race and gender relations in post-war American society.

Close analysis of Frank's photograph offers a new perspective on Newark's city bus as well. Just as passengers on the bus glimpse the swarming street life outside, so do passers-by, in turn, take fleeting glances at the bus and other elements of traffic moving up and down the street. However, while other buses feature large-scale images and familiar brand names to promote consumption, this particular bus stands out for its plain appearance and call to embrace the benefits of public transportation. Extending wheel-to-wheel and laterally covering the span of four window segments, the prominently displayed slogan invites fellow commuters to "save gas" as they "ride this bus". Bold, orange letters, set against a bright, sky blue background spell out the adage urging motorists

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39   Siegel, Steffen, "'Thru the City', Robert Frank flaniert mit dem Bus durch New York," in Frank, Robert, "From the Bus," 1958 (Berlin: Kulturstiftung der Länder, 2012), 7.

FIGURE 8.2   *Bus driver's rest area, Newark, New Jersey*[40]

to conserve fuel by switching from individual to shared modes of transportation. Both phrases are imperative constructions. Each consists of the infinitives of the verbs "to save" and "to ride" with corresponding direct objects "gas" and "bus", respectively. Information is presented truism-style, in highly abridged form. Featuring all capitalised letters, the first phrase substitutes the capital "S" in GAS with a dollar "$"-sign, thus adding another layer of meaning to the statement. Viewed by itself, the text simply reads as a call for behaviour modification driven by sheer economic considerations. Such interpretation emphasises cost-cutting and a frugal lifestyle, while omitting the environmental benefits of taking the bus. This initial understanding of the bus campaign as driven by economic considerations is confirmed by an emblem that adorns the outside wall of the bus operator's rest area at the line's terminus on the Western edge of the city.

Placed under a red, medallion-shaped logo listing the number of the bus line, the rectangular sign suggests: "Don't pay those high gas prices, save and ride our bus!" As if to compensate for the shortcomings of a call to ride public transportation out of mere monetary considerations, a supplemental

FIGURE 8.3   *Newark city bus* (*detail*)

catchphrase appears in smaller font near the rear end of some buses. Cast against a blue and green background that evokes blue skies and green meadows, the tableau of text and images makes an enhanced statement about the benefits of mass transit as an effective tool to counteract climate change.

A pair of stylised human hands protectively holds a miniature Earth that appears beautiful yet fragile. Differing from its customary representation as the "blue planet", Earth here is rendered green and surrounded by matching green flowers and butterflies. Expanding the "Save gas, ride this bus" motto, the enhanced statement adds an imperative clause about saving carbon for it now calls on riders to "Save gas. Save carbon. Save Dollars!" Transcending the economic pragmatism of the previous idiom, the revised motto acknowledges the reduction of carbon emissions as an objective for switching from cars to buses.

Charting the "bus discourse" as it presents itself to people in the streets of Newark takes on additional meaning when considering that the majority of buses serving this particular line rarely feature any advertisements at all. By contrast, most other buses operating in Newark, throughout New Jersey or in nearby New York City display large, colourful ads that capture the attention of consumers in the guise of motorists and pedestrians. The frequent absence of ads on this Newark bus also reframes the meaning of the "Save gas" campaign.

Although the reasons for the often-neutral appearance of these buses remain difficult to ascertain without knowledge of the line's business operations, one wonders whether advertisers shy away from investing in a market considered weak due to the low purchasing power of its impoverished residents. 2012 United States Census figures list Newark's median household income as $34,387 compared to $71,637 in the State of New Jersey at large. The data confirm the city's status as one of the state's poorest with a staggering rate of 28 percent of its population living in poverty.[41] With nearly a third of its residents subjected to life below the poverty line, Newark presents an environment in which the need for economic survival may indeed eclipse environmental concerns. As a result, the "save gas" campaign may resonate with those who follow out of economic necessity and for whom concerns about carbon emissions may hold less weight. Put another way, pleas to save money and carbon by reducing the emission of greenhouse gases may often mask an underlying scenario in which poverty dictates the choice of buses as the only transportation option. Moreover, poverty itself often manifests itself in deficient transportation infrastructures and their impact on people's lives. In his insightful study of transportation and poverty in Philadelphia, Matthew Schell thus works with an expanded definition of poverty as constituted through the organisation of transportation.[42]

The well-aired idea underlying save-gas-ride-this-bus campaigns holds that switching to buses as alternate choice of transportation benefits the environment in various ways. They save gas since they transport more people from one point to another while using less fuel as compared to individual modes of transportation. By doing so, buses reduce emissions and their associated carbon footprint. They further ease traffic congestion by decreasing the overall number of vehicles on the road. In that spirit, the United States Environmental Protection Agency (EPA) celebrates school buses as a "big part of American education for generations" since they provide safe transportation, help avoid accidents through driver training, decrease fuel consumption and ease traffic congestion. "Every time students take the bus," an EPA-commissioned study concludes, "they are getting a safe, clean, and environmentally friendly ride, and parents have peace of mind (and a bonus: they spend less on gas)."[43]

41   United States Census Bureau. State and County QuickFacts: Newark, New Jersey, "Persons Below Poverty Level, Percent, 2008–2012," accessed May 21, 2014. http://quickfacts.census. gov/qfd/states/34/3451000.html.

42   Schell, Matthew, "Poverty in Philadelphia: Transportation as a Change Agent," *Bulletin of Science, Technology & Society* 20.3 (2000): 185–190.

43   Koester, Christine, "Take the Bus—Save the Planet!" United States Environmental Protection Agency: It's Our Environment: EPA's Blog About Our World, accessed May 21, 2014. http://blog.epa.gov/blog/2013/09/take-the-bus-save-the-planet/.

6   Buses as Social Spaces

What indeed is the meaning and the origin of the term "bus"? Translating as "for all", dictionaries state that the contemporary English term "bus" presents an abbreviated form of the now outdated Latin phrase 'omnibus'. The word commonly denotes a public carriage or vehicle designed to move a large number of people along a route of scheduled stops, where passengers are received or discharged. The first iterations of the modern bus appeared on the streets of Paris in 1828. Carriages were initially drawn by horses, whereas successive methods employed steam engines in the following decade and utilised electricity in trolley bus designs by the 1880s. The late 19th century saw the introduction of buses with internal combustion engines, a technology that survives in today's widely used motor coaches.[44] Studying the symbolic role of the omnibus in the nineteenth-century cultural imagination, French scholar Masha Belenky examines key literary texts in nineteenth-century Paris. The omnibus, Belenky argues, quickly emerged as a symbol of urban transformation and of radical social change.[45] It always functioned as a social space. The bus was embraced by contemporary observers as a quintessentially democratic vehicle for it was "by law opened to everyone, regardless of social class or depth of one's pocket".[46] At the same time, it offered "unprecedented possibilities of class and gender collision within its confined space".[47] Graphic artists such as Grandville and Daumier in particular "capitalized on the popularity of the omnibus as a vehicle for social satire and commentary".[48]

Considering the core meaning of the term "bus" as a vehicle "for all" confirms that the association of buses with equality and egalitarian causes is a fitting connotation backed by a long historical track record. As a public space in which people gather in close proximity to one another for the purpose of traveling from one point to another, buses always doubled as stages for broader social and political conflicts. In the United States, buses played an essential role in the history of the Civil Rights Movement. They became the flashpoints of political conflict and subsequent protest. By mid-twentieth century, black Americans were still regarded as second class citizens on a daily basis every

44   Papayanis, Nicholas, *Horse-Drawn Cabs and Omnibuses in Paris: The Idea of Circulation and the Business of Public Transit* (Baton Rouge, London: Louisiana State University Press, 1996).

45   Belenky, Marsha, "From Transit to Transitoire: The Omnibus and Modernty," *Nineteenth-Century French Studies* 35.2 (2007): 408.

46   Ibid., 410.

47   Ibid., 411.

48   Ibid., 411.

time they boarded a bus and were forced to move to the 'coloured' section in the back of the cabin or give up their seats for a white passenger boarding after them. In March 1955, Claudette Colvin, a 15-year-old high school student, refused to surrender her seat to a white passenger out of her conviction that local laws relegating black passengers to the back of the bus were in fact unconstitutional. Nine months later, in December of the same year, 42-year-old seamstress Rosa Parks similarly refused to give up her seat for a white passenger. Although the actions of Parks have been widely praised as the turning point in the history of segregation, the still earlier deeds of Claudette Colvin and other historical figures equally deserve credit for mounting the seminal bus boycott in Montgomery, Alabama. Together, these acts of non-violent protest and civil disobedience ushered in the 1956 Supreme Court decision that declared the city's segregation laws on buses to be unconstitutional. Economist Yana Van der Meulen Rodgers points out that

> local leaders of the African American community perceived Claudette's youth, personality, and class to be unsuitable for holding her up as the key figure to initiate a mass boycott of the city's bus system. Rosa Parks assumed this role nine months later, thus precipitating more than a year of organised protest to end segregated bussing in Montgomery.[49]

Margot Adler, National Public Radio journalist, confirms this assessment of the historical record in her interview with Colvin:

> When asked why she is little known and why everyone thinks of Rosa Parks only, Colvin says the NAACP and all the other black organisations felt Parks would be a good icon because "she was an adult. They didn't think teenagers would be reliable". She also says Parks had the right hair and the right look. "Her skin texture was the kind that people associate with the middle class," says Colvin. "She fit that profile."[50]

Even before the actions of Colvin and Parks, still other Montgomery residents and groups set the stage for ending segregation such as the Women's Political

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49   Meulen Rodgers, Yana van der, "Review," Rutgers University Project on Economics and Children, accessed May 21, 2014. http://econkids.rutgers.edu/book-of-the-month-econ-menu-204/2039-claudette-colvin110.

50   Adler, Margot, "Before Rosa Parks, there was Claudette Colvin," National Public Radio, March 15, 2009, accessed May 21, 2014. http://www.npr.org/templates/story/story.php?storyId=101719889.

Council, a local organisation founded in 1946 that had been lobbying for improved transit conditions for Black Americans a full decade before the onset of the Montgomery bus boycott.

Buses remained closely tied to the American discourse on social and political causes during the second half of the twentieth century. Following on the heels of successful desegregation of public transportation in Alabama and other Southern states, buses once again became the flashpoints of political conflict during the 1960s. Heated debates over "bussing", the practice of transporting students across towns and regions as a means of integrating schools, started to surface by 1961. Despite the end of lawful segregation, renewed demographic shifts and persistent patterns of residential dwelling reflected a continuing stratification of society along racial lines. Serving as vehicles to transport white or black students to predominantly white or black schools, respectively, buses were employed in efforts to undo and reverse the rifts of an American society that was de facto still rigidly segregated. The practice sought to heal a nation reeling from the effects of segregation by allowing black and white students to learn alongside one another. Sharing the experience of personal and intellectual growth, the initiative aimed to turn students into conscientious citizens in a diverse and egalitarian future American society.

7   Exhibiting Transportation

The central role of buses in social and political movements in the United States paved the way for these mass transit vehicles to enter museums. Since its opening in 2003, the ongoing "America on the Move" exhibition at the Smithsonian Institution's National Museum of American History has aimed to tell American history through the story of the nation's evolving modes of transportation. The innovative concept of the show took four years to develop from 1999 to 2003. Project director and curator Steven Lubar reports that his team worked from the premise that

> [t]ransportation history is full of important but not-so-exhibitable stories: policy decisions, for example, or demographies. We could do these in words or images or video, but we decided the social history questions, and the vehicles that embody them, would take center stage.[51]

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51   Lubar, Steven, "The Making of 'America on the Move' at the National Museum of American History," *Curator* 47.1 (2004): 19–51.

In her review of the installation, curator Kirsty Devine praises Lubar's exhi-bition design by contrasting it with the shortcomings of outdated modes of display: "The sad reality for visitors is that the element of theatre and the reso-nance with everyday life that transport displays could so readily convey is missing."[52] Previously, transport museums had mounted displays that either explored the subject in overly technical ways or lacked any human reference or stories of everyday use. Lubar's decision to bring actual buses into the museum space and his team's move to embrace what Devine describes as the "element of theatre" resonates with the reading of public transportation as theatrical spaces in the work of Robin Kelley and Sarah Frohardt-Lane.

Myriad paintings and photographs also explore the bus as a site of social interaction. While an in-depth exploration of such examples exceeds the pa-rameters of this study and will be covered elsewhere, a sampling shows that the bus retains a powerful hold on the popular and artistic imagination. The life-size, plaster-cast figures of American sculptor George Segal, a close friend of photographer Robert Frank's, frequently feature bus drivers and passengers or commuters waiting at bus stops. His 1997 sculpture *Bus Passengers* conveys the crowded interior of a public bus, where six seated and standing strangers come into close contact with one another. Incorporating life-size casts of fig-ures along with genuine bus grab rods, handles and seats, Segal's work delves into the tension between the close physical proximity of passengers and their self-contained postures.

A recurrent theme in Segal's work, buses and other mass transit settings evoke an "alone-in-the-crowd" sense of alienation associated with post-war American society. Echoing the practice of other pop artists, Segal removes fig-ures and objects from their everyday contexts and rearranges them in new sculptural ensembles in which the isolated, ghostly appearance of white fig-ures evokes a sense of the impossibility of human communication and rela-tionships.[53]

The 1980s photographs of South African photographer David Goldblatt give haunting impressions of life inside apartheid South Africa. Taken on buses and at bus stops, Goldblatt's photographs record the excruciating circumstances of the three-hour commutes that black workers endured as they travelled from their assigned homelands to their low-paying jobs in Pretoria. Starting and ending in the middle of the night, the depictions of these agonising trips exem-plify the unbearable hardships of life for blacks in South Africa at the time.

52   Devine, Kirsty, "Review: America on the Move, National Museum of American History,"
      Journal of Transport History 26.1 (2005): 114.

53   Kalina, Richard, "George Segal: L&M Arts," *Sculpture* 29.10 (2010): 74–75.

FIGURE 8.4   *George Segal, Bus Passengers, 1997. Plaster, metal and plastic*[54]

Goldblatt's portraits of the struggle of workers to survive under the most ad-
verse conditions are literally framed by buses as the photographs are either
shot on board buses or at bus stops.[55] A persistent trope in popular culture, the
bus also structures movies such as Spike Lee's 1996 production *Get on the Bus*.
The film narrates the cross-country bus journey of a group of black men des-
tined to join the 1995 Million Man March in Washington, D.C. The protest rally

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54   Art © The George and Helen Segal Foundation and Carrol Janis, New York/Licensed by
        VAGA, New York City.

55   Goldblatt, David. *The Transported of KwaNdebele: A South African Odyssey* (New York:
        Aperture Books, 1989).

was organised by Louis Farrakhan, the controversial leader of the religious group Nation of Islam. In Lee's film, the bus provides a contained narrative space in which the plot unfolds. Representing a variety of opposing lifestyles, political views and religious beliefs, bus passengers discuss and argue about the meaning of politics, race, religion and sexuality on their way to the American capital. In his critical review of the movie, sociologist Paul Gilroy observes that

> [t]he bus journey provides Lee with a legitimate means to exclude women so that he can do what he does best: explore the tortured contours of the black man's being in the world. The film thus owes something to that genre of military movies in which men can confidently become intimate with one another without the distractions women would represent.[56]

In addition to his critique of the film's reductive portrayal of gender dynamics, Gilroy points to its refusal to engage the controversial and political nature of the event itself:

> Though footage of the event has been dropped in, history remains secondary to myth. To arrive (and thus to enter history) would be to stretch the field in which Lee's drama unfolds to accommodate the dimensions of a world he is only capable of addressing in the most trivial ways.[57]

Another discourse in which the bus functions as a central metaphor may come as a surprise to some: corporate management. James C. Collins, business consultant and author, has become widely known for his expertise in guiding corporations in tackling organisational change in order to strengthen and grow their organisations. Collins's publications frequently employ buses as metaphors for companies. Echoing the notion of the bus as a clearly defined narrative space in popular culture, Collins explains how "leaders of companies that go from good to great start not with 'where' but with 'who.' They start by getting the right people on the bus, the wrong people off the bus, and the right people in the right seats".[58] Collins's utilisation of buses as metaphors for the effective staffing of management teams also owes to the widely used American English phrase of "throwing somebody under the bus". This idiom, widely used in

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56   Gilroy, Paul, "Million Man Mouthpiece," *Sight and Sound* 7.8 (1997): 16–18.
57   Ibid., 17.
58   Collins, James C., "Good to Great," accessed May 21, 2014. http://www.jimcollins.com/article_topics/articles/good-to-great.html.

contemporary American political campaigns, usually denotes the act of sacrificing a friend or close ally for self-interested reasons.

8   Google Bus Attacks

Presently, buses once again make the headlines in San Francisco, Oakland and other cities in northern California's Bay Area. During what has come to be known as "Google bus attacks", protesters have repeatedly blocked, vandalised or damaged employee buses of Silicon Valley software companies such as Google, Apple and Facebook. Equipped with air-conditioning, wireless internet access and tinted windows, these luxury coaches offer free shuttle service for employees between their residences in Bay Area cities and their workplaces at technology firms. Complaints initially criticised that buses obstructed public bus stops and that companies used such facilities without properly reimbursing municipalities or paying taxes. Protests have since grown into a broader movement that views "Google buses" as symbols of gentrification and rising income inequality fuelled by the technology boom. In these incidents buses no longer function as a social space or the site of violence among passengers as seen in previous historical instances. Instead, protesters view buses and their users as manifestations of the growing divide between a new class of young, well-paid and often foreign-born technology workers who unintentionally displace an existing populace of underemployed residents whose modest incomes cannot keep pace with rising rents and costs of living. While some actions embrace non-violent means of protest such as the blocking of busses, other incidents have turned violent with rocks shattering windows and tires being slashed.[59] The bus attacks have been met with vocal support and vigorous opposition on both sides. Supporters of the protest lament that the backlash against technology companies stems from "anger over spiralling rents and evictions as young tech workers colonise previously low-income areas". In a much-cited recent incident, a young woman was threatened at a San Francisco bar for refusing to take off her Google Glass device. A newly released product of 'wearable technology', this device resembling ordinary glasses allows users to search the internet or record the world in front of them with voice prompts instead of bulky keyboards or screens. Other bar patrons explained that they suspected the woman to have used her device to record them and thus invade

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59   Alexander, Kurtis, "Tech Buses Blocked, Vandalized in Protests," *San Francisco Chronicle*, December 20, 2013, accessed May 21, 2014. http://blog.sfgate.com/stew/2013/12/20/bus-blocked-again-in-tech-boom-backlash/.

their privacy. Another guest's description of the event reveals how much the quarrel became the flashpoint of deep-seated philosophical differences about the meaning of technology in contemporary lives: "After a hiatus, someone threw a dirty bar rag at her, she said, and a woman came over and said: 'You're killing this city.'"[60] On the other side of the debate, journalist Joseph Malchow polemically frames the bus attacks as "leftist class warfare" that fails to acknowledge how much these buses ease traffic congestion and invigorate the local economy: "Dubbed 'Google buses', the shuttles remove thousands of cars from San Francisco's madcap streets and allow coders to continue building the enterprises that help to keep the city's jobless rate at 4.8%."[61] Malchow's argument certainly has traction in light of California's notorious highway congestion and economic challenges. Yet, as in other examples explored in this essay, comprehensive analysis of problems related to transportation, the economy and environmental issues such as climate change frequently falls short when it refuses to take into account all dimensions of the issue in dialectical fashion. Therefore, protesters' fear of displacement by what they describe as an invasion of tech workers who price them out of low-income habitats is just as valid as the concerns of those who advocate car pools, employee buses and improved public transportation infrastructure. Yet, the refusal to bring into play all dimensions of a problem, be that environmental concerns, climate change, class tensions or economic considerations, can only yield truncated debates that will not do justice to the complexity of the challenge at hand. Debates about meaningful efforts to promote public transportation as a way to counteract climate change in particular frequently downplay or overlook class tensions. In the 1950s, the aforementioned story of Claudette Colvin's long-standing omission from the historical record of the Montgomery bus boycott already underscored the apparent difficulty of acknowledging class divisions among blacks in an otherwise affirmative political movement that sought to advance racial justice and equality. Today, the arguments over the attacks on "Google buses" unfolding in California's Bay Area reveal a persistent refusal or inability to expand the debate in a manner that fosters the kind of broad, systemic analysis needed to tackle the interrelated effects of poverty, climate change, class

60   Allen, Nick, "Google Glass Attack: Tech Giant Accused of 'Killing' San Francisco," *The Tele-graph*, 8 May 2014, accessed May 21, 2014. http://www.telegraph.co.uk/news/worldnews/northamerica/usa/10685059/San-Francisco-divided-over-being-epicentre-of-the-internet-age.html.

61   Malchow, Joseph, "Those Nonsensical 'Google Bus' Attacks," *Wall Street Journal*, March 10, 2014, accessed May 21, 2014. http://online.wsj.com/news/articles/SB10001424052702304026804579411432350179154.

divisions and race relations. The fact that even some of the most esteemed voices in the American struggle for racial justice and economic equality continue to hold the bus in low esteem shows how much work remains to be done. Amiri Baraka, the late poet and famous Newark native, was recently eulogised by fellow writer and contemporary Ishmael Reed in a telling way:

> Amiri Baraka and I clashed. Often. He once called me "a jet plane flying lying n—." My response was that when Amiri, a communist, gave up his American Express card, I'd start riding the bus. We sat standards for young people with our arguments. They were conducted using poetry and wit. Not once was an AK-47 employed.[62]

Simultaneously critical and affectionate, Reed's obituary underscores their past practice of constructive debate despite personal difference for the sake of egalitarian causes. Tellingly, this affirmation occurs at the symbolic expense of the bus, a mode of transportation that continues to be held in low regard, perhaps due to its association with the poor and their inability to afford faster and more comfortable means of transportation. Once again, the bus is evoked as a lens through which to debate the meaning of class, race and equality. References to the AK-47 celebrate the fact that the generation of Baraka and Reed did not revert to such destructive technologies for they transcended violence with poetry. Unfortunately, this priceless ability has become far too elusive for current generations that continue to face the everyday effects of poverty and violence, exacerbated by climate and environmental change. Reed's dismissive account of bus riding reminds readers that unacknowledged class divisions and the challenges of a changing environment and climate remain formidable challenges for future generations.

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62   Reed, Ishmael, "Ishmael Reed on the Life and Death of Amiri Baraka," *Wall Street Journal*, January 12, 2014, accessed May 21, 2014. http://blogs.wsj.com/speakeasy/2014/01/12/ishmael-reed-on-the-life-and-death-of-amiri-baraka/.

Climate Change Beliefs and Climate-relevant Behaviour at the Northern US West Coast— A Practice Theoretical Analysis

Karin Schürmann

Abstract

It is common to attribute a person's environmentally and climate-friendly behaviour to corresponding beliefs and attitudes. According to this assumption, green behaviour results from green thinking and can be fostered through education. Although many people have a sound knowledge about the causes of climate change as well as other environmental issues and express climate and environmentally-friendly beliefs and attitudes, their actions still speak a different language. It seems plausible to suppose, therefore, that the relation between beliefs, attitudes and behaviour is more complex than assumed commonly.

This article aims to help understand the relationship between environmental and climate-relevant beliefs and behaviour by offering a different perspective. Instead of adhering to a causal relationship between thinking and acting the following study is based on the assumption that human activities strongly depend on the logic of social practices. The paper will give a short introduction to the theory of social practices. Based on these practice theoretical foundations, the second part of the paper will be dedicated to an empirical analysis of climate change beliefs and the practice of mobility as it is carried out in the everyday life of 21 interviewees living in selected urban centres on the Northern US West Coast.

1 Introduction

With growing scientific certainty about the existence and progression of climate change as well as its consequences,[1] the question of what can be done to tackle this challenge becomes increasingly relevant. The answers given very often resemble the ones expressed in connection to environmental problems

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1 Cf. Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Synthesis Report* (Geneva: IPCC, 2007).

in general: A transformation of the Western way of life towards sustainability is inevitable and this goal requires fundamental changes of individual behaviour.[2]

As James Blake has shown, policy makers often tend to base their hopes for more environmentally-friendly behaviour on education and the distribution of information.[3] Anja Kollmuss and Julian Agyeman add that the same applies for "most environmental Non-governmental Organisations",[4] too. What becomes obvious thereby is the fact that actors working professionally for the spreading of environmentally-friendly behaviour stick to scientifically outdated rationalist models that—according to Kollmuss and Agyeman—"were based on a linear progression of environmental knowledge leading to environmental awareness and concern (environmental attitudes), which in turn was thought to lead to pro-environmental behavior. These rationalist models assumed that educating people about environmental issues would automatically result in more pro-environmental behavior".[5]

It is plausible to assume that information on the most pressing environmental issues in general and climate change in particular is highly available for the American people and that they will be educated on them at school or confronted with them when watching TV, reading a newspaper or surfing on the internet.[6] Additionally, Willet Kempton, James S. Boster, and Jennifer A. Hartley stated already in 1995 that environmental concern and pro-environmental attitudes have been widely common in the US for several decades.[7] However, many aspects of the so-called American way of life as they are performed by

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2   Cf. e.g. Shove, Elisabeth, "Beyond the ABC: Climate Change Policy and Theories of Social Change," *Environment and Planning A* 42.6 (2010): 1274.

3   Cf. Blake, James, "Overcoming the 'Value-Action Gap' in Environmental Policy: Tensions between National Policy and Local Experience," *Local Environment* 4.3 (1999): 258–261.

4   Kollmuss, Anja, and Julian Agyeman, "Mind the Gap: Why do People Act Environmentally and what are the Barriers to Pro-Environmental Behavior?" *Environmental Education Research* 8.3 (2002): 241.

5   Loc. cit.

6   The causes of climate change and even its existence have been more a matter of debate in the US than e.g. in Europe. While portraying the issue of climate change, some parts of the US media have not seldom provided a forum for climate sceptics. However, as this paper is concerned with the relation between climate-friendly attitudes and climate-friendly behaviour, there is no need to consider this peculiarity here. For a detailed discussion of the significance of media coverage with respect to the issue of climate change, please consult the article by Maxwell Boykoff and Michael Goodman in this volume.

7   Cf. Kempton, Willet, James S. Boster, and Jennifer A. Hartley, *Environmental Values in American Culture* (Cambridge, MA, London: The MIT Press, 1995), 3–5.

individuals in their everyday life are still far from being environmentally and climate-friendly.

The fact that people often act in contradiction to their knowledge about environmental problems and their environmentally-friendly attitudes is a widely acknowledged phenomenon referred to by scientists as the 'value-action gap'[8] or 'attitude-behaviour gap'.[9] According to Kollmuss and Agyeman, a huge number of attempts have been undertaken "to explain the gap between the possession of environmental knowledge and environmental awareness, and displaying pro-environmental behaviour. Although many hundreds of studies have been done, no definitive answers have been found".[10] The only thing contemporary researchers agree on is the refusal of the early rationalist models. Blake, for example, objects that many psychological approaches "share common roots in a rationalistic model where reasoned human agency is viewed as the key determinant of action, and where social and institutional constraints, if included at all, are considered only for their effects on individual attitudes."[11] He therefore welcomes a more recent school of social science research which also considers the "relations between individuals and social institutions".[12] Blake's own investigations can also be assigned to this school of research. By empirically disclosing three types of barriers to environmentally-friendly behaviour—individuality, responsibility, and practicality—his considerations strive to prove that "both psychological and institutional factors affect individual action"[13].

Kollmuss and Agyeman, as another example, try to illuminate the gap between knowledge, attitudes, and action by presenting a collection of factors that have been identified to influence environmentally-friendly behaviour. Their strategy is to portray "a few of the most influential and commonly used frameworks for analyzing pro-environmental behavior"[14] —including Blake's—and to specify all behaviour-relevant factors they could extract from these different frameworks. Kollmuss and Agyeman assign them to three different groups: "demographic factors, external factors (e.g. institutional, economic, social, and cultural factors) and internal factors (e.g. motivation, environmental knowledge, awareness, values, attitudes, emotion, locus of control,

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8   Cf. Blake, "Overcoming the 'Value-Action Gap'," 257.

9   Cf. Kollmuss and Agyeman, "Mind the Gap," 246. Kollmuss and Agyeman also use the term "attitude-action gap" (248).

10   Ibid., 240.

11   Blake, "Overcoming the 'Value-Action Gap'," 264.

12   Ibid., 265.

13   Ibid., 266.

14   Kollmuss and Agyeman, "Mind the Gap," 240.

responsibilities, and priorities)"[15] and finally combine them into a very complex model of pro-environmental behaviour.[16] Kollmuss and Agyeman's considerations equal Blake's approach insofar as both admit the role of external factors but nevertheless focus on the individual and the question what keeps him or her from acting more environmentally-friendly.

Elisabeth Shove pleads for a change in perspective. In her paper "Beyond the ABC: Climate Change Policy and Theories of Social Change," she criticises the tendency of climate change policy makers to disregard scientific research which deviates from models focussing on the individual as the key to more societal climate-friendliness. For Shove, research offers promising new approaches, yet "social change is thought to depend upon values and attitudes (the A), which are believed to drive the kinds of behaviour (the B) that individuals choose (the C) to adopt. The ABC model [...] resonates with widely shared, commonsense ideas about media influence and individual agency."[17] After describing several scientific approaches which differ from what she calls the 'ABC model',[18] Shove turns to theories of practice[19] and illustrates the methodological consequences which follow from this change in perspective, namely that practices "represent more than a 'domain of study': in effect they constitute the *unit of enquiry*"[20]. To put it differently, from a practice theoretical point of view, the spotlight lies no longer on individuals, internal motives and external constraints but on the actual doings themselves, that is, the very practices individuals participate in. While Shove expresses her doubts that studies which rely on the 'ABC-model' could be of any help to explain issues like the 'value-action gap',[21] she implies that practice theoretical research projects could offer fruitful results—"if the task was one of analysing the emergence and disappearance of more and less sustainable ways of life."[22]

Adopting Shove's assumption that research based on practice theory could help to find new answers to old but still unsolved environmental problems like the so-called 'value-action gap', the following study uses this approach to investigate the relation between climate change beliefs and the climate-relevant practice of mobility as it is carried out by 21 individuals living on the Northern US West Coast. As the Pacific Northwest has a reputation for being *greener*

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15   Kollmuss and Agyeman, "Mind the Gap," 240 and 248.

16   Cf. Ibid., 256–257.

17   Shove, "Beyond the ABC," 1274.

18   Cf. ibid., 1277–1278.

19   Cf. ibid., 1279.

20   Loc. cit.

21   Cf. ibid., 1276.

22   Ibid., 1280.

than the rest of the country, this region recommends itself for an investigation of the relation between climate-relevant beliefs and behaviour. Before turning to the empirical analysis, it is necessary to explain the theoretical approach as it is used in this study. The next section will therefore be dedicated to a short introduction to practice theory. Afterwards, some information on the acquisition of the empirical data will be provided. The empirical analysis itself will then consist of two parts: While the first part provides a description of the climate change beliefs as they are expressed by the members of the interview sample, the second part will be focused on the practice of mobility. Here, the question of why the corresponding interviewees carry out this particular practice the way they do will be answered. The conclusion—despite of summing up all relevant findings—will offer a discreet proposal for making use of the practice theoretical findings regarding the goal of more societal climate-friendliness.

2   Practice Theory

The practice theoretical approach as it is used in the following study is based on the theoretical considerations of Andreas Reckwitz and Theodore R. Schatzki. Reckwitz's scientific work is a good starting point for an introduction to the theory of social practices because his considerations rely on a comparison of the approaches of several practice theorists, for example Pierre Bourdieu, Michel Foucault, Anthony Giddens, Bruno Latour, and Charles Taylor, to name just a few.[23] His work tries to synthesise these different approaches, or, as he puts it himself, it forms "an idealised model of practice theory".[24]

So, what is practice theory? According to Reckwitz, practice theory is a special form of cultural theory[25] which gives in comparison to other social theories a different answer to the question of where 'the social' can be located.[26] For cultural theorists, 'the social' can be based neither on personal intentions nor on social norms as the source for actions carried out by individuals;[27] rather it leans, so to speak, on other basic elements, namely the "symbolic and

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23   Cf. Reckwitz, Andreas, "Toward a Theory of Social Practices: A Development in Culturalist Theorising," *European Journal of Social Theory* 5.2 (2002): 243–263; Reckwitz, Andreas, "Grundelemente einer Theorie sozialer Praktiken: Eine sozialtheoretische Perspektive," *Zeitschrift für Soziologie* 32.4 (2003): 282–301.

24   Reckwitz, "Toward a Theory of Social Practices," 244.

25   Cf. ibid, 245–246.

26   Cf. Reckwitz, "Grundelemente einer Theorie sozialer Praktiken, " 286.

27   Cf. ibid., 287.

cognitive structures of knowledge."[28] From this it follows that all cultural theories are concerned with the question of how individuals perceive the world as meaningful and take culture as the answer. As Reckwitz puts it, culture, in the sense of symbolic structures or 'systems of knowledge',[29] provides everything in the world with meaning and thus enables individuals to act appropriately.[30] Practice theory is a special form of cultural theory which regards social practices as the basis of 'the social' and thinks about the social world as an entanglement of certain practices.[31] According to Reckwitz, practice theory is also interested in the 'systems of knowledge' that enable individuals to act meaningfully in the social world; however, practice theorists envision these 'systems of knowledge' as practical knowledge, as a special form of know-how, so to speak.[32] Practical knowledge has to be understood as a crucial part of any social practice which becomes incorporated into the bodies of the individuals carrying out the corresponding practice.[33] Simply put, practical knowledge can be envisioned as a special type of know-how which implicitly structures what individuals do in a certain area of life because it fixes and reflects routinised activities.

If practice theory regards social practices as the foundation of 'the social', and consequently locates the 'systems of knowledge' that structure what individuals do in social practices, this raises the question: what social phenomena in particular are described by the term 'social practices'? For Reckwitz a practice is "a routinised type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge".[34] Take, for example, the practice of driving a car. In order to carry out this practice the driver performs several bodily activities like moving the steering wheel in a certain direction with his or her hands or stepping on the brake or the accelerator with his or her foot. These bodily activities cannot take place, however, without corresponding mental activities. The driver must, for instance, know how to interpret the colours red and green when he or she is approaching the traffic lights. Additionally, after having learned how to drive, the driver knows how to use

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28   Reckwitz, "Toward a Theory of Social Practices," 247.

29   Reckwitz uses the German term "Wissensordnungen".

30   Cf. Reckwitz, "Grundelemente einer Theorie sozialer Praktiken," 288.

31   Cf. ibid., 289.

32   Cf. loc. cit.

33   Cf. loc. cit.

34   Reckwitz, "Toward a Theory of Social Practices," 249.

the vehicle, for example, how to handle the clutch. As Reckwitz has pointed out, all these different aspects that become relevant when carrying out the practice of driving a car are interconnected and it would be difficult for an experienced driver to explain bit by bit what bodily and mental activities he or she executes while driving; he or she just knows implicitly what to do and does it. Or, to put it differently, he or she has incorporated the practical knowledge of driving.

In his definition of social practices, Reckwitz also mentions the elements 'states of emotion' and 'motivational knowledge' which have not been explained yet. In order to illustrate what he means by these terms it seems useful to first introduce the definition of social practices as it was coined by Theodore R. Schatzki.

Schatzki defines a "practice as a temporally unfolding and spatially dispersed nexus of doings and sayings".[35] By using the expressions 'temporally unfolding' and 'spatially dispersed', Schatzki refers to the fact that practices must not be envisioned as universal phenomena but have to be understood as routinised activities as they have developed in particular regions at particular points in time. Just as noteworthy is Schatzki's statement that any practice forms a 'nexus of doings and sayings'. Thus, social practices comprise a set of different basic actions that are organised in a certain manner.

But what is it that according to Schatzki organises the doings and sayings that form a social practice? Schatzki ascribes the organisation of a practice's elements to three "avenues of linkage [...]: (1) through understandings, for example, of what to say and do; (2) through explicit rules, principles, precepts, and instructions; and (3) through what I will call 'teleoaffective' structures embracing ends, projects, tasks, purposes, beliefs, emotions, and moods"[36]. Particularly relevant for the exposition at hand is what Schatzki calls 'teleoaffective structures'; a term he coins through merging the concepts of teleology and affectivity.[37] Simply put, this term is supposed to refer to what individuals carrying out a practice aim for and how they feel about it. It is important, however, not to understand Schatzki's considerations on 'teleoaffective structures' as a reference to independently planned activities. What individuals aim for and how they feel about it is rather dependent on what practices allow them to do

35   Schatzki, Theodore R., *Social Practices: A Wittgensteinian Approach to Human Activity and the Social* (Cambridge, New York, Melbourne: Cambridge University Press, 1996), 89.

36   Schatzki, *Social Practices*, 89.

37   Cf. Schatzki, Theodore R., "Practice Mind-ed Orders," in *The Practice Turn in Contemporary Theory*, ed. Theodore R. Schatzki, Karin Knorr Cetina and Eike von Savigny (Abingdon, New York: Routledge, 2001), 52.

and feel. According to Schatzki, a practice's teleoaffective structure must be envisioned as "a range of acceptable or correct ends, acceptable or correct tasks to carry out for those ends, acceptable or correct beliefs (etc.) given which specific tasks are carried out for the sake of these ends, and even acceptable or correct emotions out of which to do so".[38] It seems more than likely that Reckwitz refers to Schatzki's concept of 'teleoaffective structures' when he defines 'states of emotion' and 'motivational knowledge' as crucial elements of social practices.

Before leaving the theoretical framework for this study and moving on to the empirical analysis one final remark in regard to social practices needs to be made. From the aforementioned considerations it should have become clear that one has to differentiate between a particular practice understood as a social phenomenon and the events of this practice as they are actually carried out by individuals.[39] Thus, one can conclude that an individual carrying out a practice may be taken as a clue to the practice as a social phenomenon, but he or she must not be mistaken for reflecting the practice as a whole. From this it follows that the constitutive elements, which Reckwitz and Schatzki ascribe to social practices, must not be mistaken as attributes of acting individuals;[40] they have to be understood as integral parts of practices that will never be absorbed completely by individuals carrying out the practice. Schatzki exemplifies this interrelation for the organising parameter of 'teleoaffective structures'. According to him, a 'teleoaffective structure' is "the property of a practice: a set of ends, projects, and affectivities that, as a collection, is (1) expressed in the open-ended set of doings and sayings that compose the practice and (2) unevenly incorporated into different participants' mind and actions."[41] This definition of the relation between a practice as a whole and the events of it being performed by individuals should be kept in mind when it comes to the empirical analysis.

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38   Cf. Schatzki, "Practice Mind-ed Orders," 53.

39   Cf. Schatzki, *Social Practices*, 89–90.

40   Ibid., 105; Reckwitz, "Toward a Theory of Social Practices," 250.

41   Schatzki, Theodore R., *The Site of the Social: A Philosophical Account of the Constitution of Social Life and Change* (University Park: The Pennsylvania State University Press, 2002), 80.

3   Data and Method

The following empirical analysis makes use of 21 narrative-based interviews that were conducted in 2009 in Tacoma, Washington, and in the metropolitan area of Portland, Oregon.[42] The interviews were based on the so-called environmental-biographical interview which was developed in order to investigate the perception and non-perception of environmental change.[43] The environmental-biographical interview has to be understood as a qualitative interview

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[42]   Originally, the interviews were part of a larger pool of interviews that was conducted for the research project "Shifting Baselines" which belongs to the research area "Climate and Culture" at the Institute for Advanced Study in the Humanities in Essen, Germany. In total, 55 US residents were interviewed for this research project. The sample (fourteen women and seven men aged 28 to 81) used for the study at hand was selected because these 21 interviews were conducted in a row within 16 days. This selection ensures that the corresponding participants were interviewed under similar external conditions and not influenced by differing events (e.g. news coverage on new scientific findings), which might have an influence on particular climate change beliefs. The research project "Shifting Baselines" is concerned with the question to what extent environmental changes can be and actually are perceived by individuals. The inspiration for this research project derives from the work of marine biologist Daniel Pauly who diagnosed the so-called "shifting baseline syndrome" for the scientific community in fisheries science (cf. Pauly, Daniel, "Anecdotes and the Shifting Baseline Syndrome of Fisheries," *Trends in Ecology and Evolution* 10 (1995): 430). As Pauly has revealed, humans tend to be unimpressed by environmental changes simply because they do not perceive long-term changes in their entirety but only in regard to conditions they have witnessed themselves earlier on in their (professional) life. Founded on Pauly's findings, the social psychologist Harald Welzer has shown that the "shifting baseline syndrome" is not only a phenomenon that can be witnessed in regard to changes of the natural environment but also in regard to changes taking place in the social environment. (cf. Welzer, Harald, *Klimakriege: Wofür im 21. Jahrhundert getötet wird* (Frankfurt a. M.: Fischer, 2007, 212–218). The research project "Shifting Baselines" is based on the assumption that the "shifting baseline syndrome" is a noteworthy phenomenon in regard to huge environmental challenges like climate change, for it can be assumed that the parallel between environmental changes and the human perception or rather non-perception of these changes might lead to situations in which individuals as well as societies in general might not recognise changes until it is too late to face them. Therefore, the research project "Shifting Baselines" aims at finding empirical evidence for the existence of the "shifting baseline syndrome" in climate-relevant aspects of everyday life in four different countries (China, Germany, Switzerland, and the US) in order to provide a foundation for the development of strategies to face this phenomenon and foster a broader awareness of significant environmental changes.

[43]   The environmental-biographical interview as it was used for the interviews at hand was exclusively designed for the purposes of the research project "Shifting Baselines".

combining a narrative and a guided part. The first part of the interview was introduced by asking the interviewees to describe the environment they grew up in and to talk about places and events they themselves regarded as relevant. Without restricting this request explicitly to memories of the natural environment, the stories that were told in the narrative part of the interview thus comprised discussions of the natural as well as of the cultural and social environment surrounding the interviewees in the course of their biographies. The second part of the interview consisted in additional questions about climate-relevant practices of everyday life as well as a discussion of personal hopes, dreams, and concerns. In this phase of the interview the participants were also asked whether they considered climate change to be a threat. The majority of the 21 interviewees replied not only by giving a direct answer to that question but also by elaborating on climate change beliefs and climate-relevant behaviour. The empirical data derived from the interviews conducted in Tacoma and Greater Portland is therefore very suitable for an analysis that aims at investigating the relation between environmental and climate-relevant beliefs and behaviour.

4 Empirical Findings

4.1 Climate Change Beliefs

In order to analyse the relation between climate-relevant beliefs and behaviour from a practice theoretical point of view, it seems advisable to start with a separate discussion of the corresponding beliefs of the interviewees. All interviewees participating in the study take climate change as a fact. Whether they express that they felt personally threatened by climate change or not, all of them reveal their certainty that climate change is actually happening.[44] Take, for example, 39-year-old Victor[45] who expresses this belief explicitly:

> Does it directly impact us right now, today? I mean, not really. But if you really do the research and you look at what's going on, it's like, it's

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44   Two of the eldest interviewees (72 and 81 years old respectively) replied to the question whether they considered climate change to be a threat by referring to general climatic conditions in Oregon. It seems likely that both interviewees were not familiar with the term 'climate change' or misunderstood the question. Whether their answers would have been different if the term 'global warming' had been used instead of 'climate change' remains uncertain. Their answers will therefore not be considered for the following analysis.

45   All names used in connection to interview excerpts are pseudonyms.

happening. And it's not a question of if, you know, it's here, it's now, it's occurring.[46]

Most interviewees, however, do not express the belief that climate change is a fact as explicitly as Victor does, but affirm it implicitly by describing changes in the natural environment they themselves have witnessed[47] or by discussing climate-relevant actions they perform as a personal reaction to climate change[48].

With regard to the causes of climate change the picture is not as clear-cut, but still two major types of beliefs can be generated. According to the first type, which the vast majority of interviewees has to be assigned to, climate change results from the energy-consuming and emission-intensive way of life of modern humankind. Simply put, for interviewees belonging to this first type climate change is 'man-made'. A typical statement for this type is given by 42-year-old Tom:

> You know, even if there was no climate change I wouldn't be happy with the way things are done, obviously. [...] But I also happen to know that there is climate change and I truly believe it. It's a human; human activity is the primary cause of this and so, yeah, it's a big concern, big concern.[49]

According to the second type, climate change is a mixture of natural cycles and a human contribution. Although the interviewees assigned to the second type agree on the 'mixture-theory', they disagree on the question to what extent humans contribute to the phenomenon of climate change. Their statements

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46   Interview 44, paragraph 68.

47   For example Wilson, 78 years old: "Because in my life time I've seen the climate go from those World War II years that I mentioned to you which were really quite cold and quite snowy in the wintertime here to hardly any now. And from where the large glaciers, to see how far they've receded in the last 50 years. Yeah, that's bothering." (Interview 45, paragraph 64)

48   For example Mary, 40 years old: "I try to do everything I can, we try to do everything we can, by composting, by having one car, by not having kids, by not, you know, like there's a lot of things we do to keep our carbon footprint smaller" (Interview 27, paragraph 37).

49   Interview 42, paragraphs 61–63.

range from assuming a minimal impact of human activity[50] to regarding human activity as the driving force that is dangerously alternating natural cycles.[51]

For what can also be observed by analysing the empirical data is the fact that most interviewees—nearly all participants who are convinced that climate change is 'man-made' as well as the majority of the ones expressing the 'mixture theory'—discuss climate change by referring to the role of the individual. However, the question of what the individual is able to do when it comes to tackling the issue of climate change is a matter of disagreement. Again, two types of beliefs can be generated from the participants' statements. According to the first type, climate change can and must be addressed on the individual level because every individual is able to make a difference by acting in a climate-friendly way. A good example for this type can be found in the answer 43-year-old Nicole gives when being asked whether she personally regards climate change to be an issue:

> I do the best I can with it, you know. I ride mass transportation. I try to do the local, buying local. And, yes, I do composting and recycling and try to throw away as little as possible. The button pops off my shirt, I'm gonna sew it back on, I'm not gonna toss the shirt out. But, you know, it does concern me, you know, it does concern me and I do the best I can and that's all you can do and try to help others figure out that they can do a little bit, too.[52]

Although Nicole talks about herself and refers to some climate-relevant practices she performs in her everyday life, it becomes clear from what she says that she also refers to the power of the individual in general. Moreover, she mentions the aim to "try to help others figure out that they can do a little bit, too." According to Nicole's statement, it is not only the single individual that makes a difference, but individuals inspiring other individuals. This assumption could be rephrased as a belief according to which some individuals function as starting points for climate-friendly changes in behaviour and—through the means of communication and exemplification—others will follow.

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50   For example Oliver, 68 years old: "I think it's just a natural cycle. [...] I'm not convinced that humans have that much to do with it. I think it's a bigger thing than what humans are doing. [...] But there are more people in the world with more automobiles and smoke stacks and, I don't know." (Interview 31, paragraphs 64–66)

51   For example Becky, 67 years old: "I understand from a point, a science point, that this is just one of the cycles but I really think mankind has added to increasing the speed of changing the cycles." (Interview 46, paragraph 50)

52   Interview 29, paragraph 58.

While Nicole refers more or less implicitly to the importance of the diffusion of climate-friendly behaviour and the assumption that mitigation measures rely on many individuals acting accordingly, this belief is expressed more explicitly by 67-year-old Becky:

> Definitely, climate change is a concern. You know, we do our tiny little part and if each person does their tiny little part then it all adds together. We recycle, buy green, we try and eat green and I don't know that there is much else we can do except educating people into it.[53]

Like Nicole, Becky also combines the portrayal of individual climate-friendly doings with a pronouncement of a general belief. According to her statement, individuals can have an influence on the progression of climate change because they do not exist in isolation. While the climate-relevance of one individual's doings may be marginal, it becomes crucial when individuals as a group act similarly. Becky also mentions the widely accepted assumption that climate change education will result in an increase of climate-friendly behaviour.

28-year-old Zoe expresses a belief that is close to the one Becky revealed in her statement, namely the assumption that although one individual's climate-friendly doings hardly have an affect on the progression of climate change, individuals together as a group acting in a climate-friendly way do have the power to make a difference. However, in the case of Becky this assumption was phrased as a hopeful and optimistic prospect; Zoe describes it as the biggest obstacle when it comes to tackle the issue of climate change:

> Personally, it's hard. I think people have a hard time worrying about climate change on a personal level because it's something that you can't; I mean if everybody were working towards the same goal you could affect it but you can't, on a personal level. So, I think it's very hard to see that, you know, to have that community minded effort when your community is so many billions of people. [...] It's hard to know, it's hard to feel as one individual like you can make a big difference. Of course, though, you can. I mean, of course, that's all that can be done in a lot of ways but it's also frustrating to think.[54]

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53   Interview 46, paragraph 50.

54   Interview 41, paragraph 70.

Zoe's statement reveals a belief according to which climate change is in fact an issue that can and must be addressed on the level of the individual whilst the motivation for individuals to act in a climate-friendly way is slowed down by the fact that individual actions will only have an affect on climate change if everybody acts accordingly. By having this pessimistic undertone, Zoe's statement constitutes a binding position between the first and the second type of individual-related beliefs.

According to the second type of individual-related beliefs, the individual is not able to do anything against the issue of climate change. This belief, which can be found by far less often in the empirical material, is for instance expressed in the following excerpt taken from the interview with 69-year-old Paula:

> I don't worry about it too much because; no; it's different every year. There is nothing we can really do about it, is there? Nothing I can do about it. At least when, you know, I worry about the people that try to scare us I can vote. I can't do anything about climate change except trying to be more careful about stuff.[55]

For Paula, neither a single individual nor individuals together as a group have the power to do anything against climate change. And being as it is according to Paula, there is no use of worrying about climate change because it cannot be influenced anyway. This belief of powerlessness becomes particularly apparent when she compares it to the significance of the individual vote in the course of political elections.[56] However, she does not explain what she means by "trying to be more careful about stuff" so one can only speculate on what she refers to. Regarding the scepticism she expresses about individual and collective actions against climate change it seems possible that this phrase might also be an indication of what she thinks is expected of her to say in a famously environmentally conscious region like the Pacific Northwest.

The aforementioned climate change beliefs will be further analysed with regard to social practices in the following. First, however, it seems necessary to comment on another empirical finding that has not been mentioned yet but that has already surfaced in some of the excerpts illustrated so far: The fact that

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55   Interview 32, paragraph 112.

56   As she has explained earlier on in the interview, Paula is concerned about "certain elements in our country that are trying to scare Americans. [...] For some reason the people in charge like to keep Americans afraid and I find that very disturbing." (Interview 32, paragraph 96).

the majority of the interviewees who express the belief that individuals have the power to affect the progression of climate change tend to talk about climate change as one environmental problem among others. Take, for example, Nicole who does not only refer to climate-relevant practices like mobility and food consumption, but also to the practices of recycling, composting and repairing. For sure, some sort of climate-relevance can be ascribed to the latter practices as well, but what they mainly stand for is classic environmentally-friendly behaviour.

The tendency to mingle climate-friendly behaviour with environmentally-friendly behaviour while discussing climate change becomes even more apparent in the answers 70-year-old Tina gives to the question whether she considers climate change to be an issue:

> Yes, it is. Yes, and I think of all the pollution that we create. Are we going to wake up in time to do something about it? So, I think, personally, I can just do one little bit at the time so I try my best. I don't pollute any more than I have to. I don't use chemicals, I don't use cleaning fluids. I polish, what little polishing I do, with mayonnaise. I use vinegar to clean. I don't buy all the chemicals. I just don't believe in them.[57]

By introducing the aspect of pollution and presenting the actions she carries out in order not to contribute to this environmental problem any more than she has to, Tina perfectly illustrates with her answer the widely common tendency to discuss climate change as just another environmental problem.[58] The question of why many statements reveal a tendency to refer to individually performed environment-friendly actions when it comes to discussing climate change cannot be discussed in detail here. However, it seems plausible to assume that the interviewees who express the belief that every individual or individuals together as a group have the power to affect the progression of climate change also want to perceive themselves as individuals who in fact make a difference. And while one cannot see or feel the direct consequences of riding public transportation or reducing one's energy-consumption at home, one can actually see and feel the results of composting, repairing, collecting plastic and paper in a recycling bin, or refraining from chemicals when cleaning.

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57   Interview 36, paragraph 56.
58   Cf. e.g. Kempton, Boster, and Hartley, *Environmental Values*, 64–66.

4.2   *Climate-relevant Practices*

So far, the portrayal of climate change beliefs has revealed a strong tendency among the interviewees to combine the issue with the discussion of the role of the individual. What has also become apparent is the fact that interviewees assigned to the first type of individual-related beliefs—the ones expressing the conviction that every individual is able to make a difference—often illustrate this belief by referring to climate-friendly and environmentally-friendly actions they perform themselves. Excerpts like the ones taken from the interviews with Nicole and Becky, for instance, suggest that the climate and environmentally-friendly actions they describe constitute a causal consequence of their climate change beliefs. But does the empirical material really lead to the conclusion that green thinking causes green behaviour?[59] A first hint to the fact that the relation between climate change beliefs and climate-friendly behaviour is much more complicated can be found in what 46-year-old Susan replies when being asked whether climate change is an issue for her personally:

> No, I mean, I suppose it should be but no. I think that we do need to do a lot to curtail how we interact with our environments but then, here I am, driving a car to work on a daily basis and not doing anything on that because that would require moving. But in the process of moving my husband will be farther away from work, so, at the moment we're probably a mile from his place of work and two miles from my daughter's school. So, I'm not doing a whole lot of my part of decreasing my carbon emissions.[60]

It is obvious that Susan also considers climate change to be a challenge which could be tackled on the level of the individual. However, as she admits herself, despite of having enough knowledge of the climate-relevant consequences of her actions in the field of mobility—she talks about not "decreasing" her "carbon emissions"—she does not change her behaviour. Of course, the dilemma of her and her husband's workplace being located in different cities cannot be resolved easily, so things being as they are, one of them has to face a longer

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59   The definition of green behaviour in the field of mobility can be a matter of debate. With regard to greenhouse gas emissions and the consumption of natural resources, the study at hand considers the use of public transportation as well as riding a bicycle or walking as the most climate and environmentally-friendly forms of mobility. Driving a car by oneself, on the other hand, is regarded as the mode of transportation with the highest negative impact on climate and the environment. Carpooling is considered less harmful and therefore more climate and environmentally-friendly than driving alone.

60   Interview 34, paragraph 40.

commute. The question is, though, if climate-friendly alternatives are available for her for getting to and from work. When Susan is asked in the interview whether she usually uses the car as a means of transportation in her everyday life she replies:

> Yes. Our town is not in the transit system. Washington County, Multnomah County, Clackamas County all have a really good bus and train, the MAX[61], the light rail train, but it's only for those counties. [...] There is no, well, excuse me, there is this little tiny bus that'll do our county but it's not convenient so yes, I am a driver. I do not commute with anybody to work. I drive by myself.[62]

As this statement shows, there are in fact alternatives to commuting by car by herself, but the use of public transportation does not offer itself as a real alternative for Susan because it would complicate getting to work for her. In other words, the climate change beliefs Susan carries do not seem to be the factors that determine what she tends to do in the area of mobility in her everyday life.

To better understand why individuals act the way they do it seems helpful to change the perspective of the empirical analysis at hand and switch over to the practice theoretical approach introduced in chapter 2. As this paper does not allow a comprehensive analysis of all the climate-relevant practices that were mentioned in the interview excerpts so far, the following remarks will continue to focus on the practice of mobility. It goes without saying that the following analysis will necessarily simplify the complexity of the relation between beliefs and behaviour and some factors that may also be of significance in this context may be ignored. However, in order to highlight the advantages of practice theory for the purpose of analysing barriers to climate and environmentally-friendly behaviour, this approach seems to be appropriate.

What practice theoretical conclusions can be drawn from the excerpts of the interview with Susan? First of all it is necessary to remember the practice theoretical assumption that one has to differentiate between the practice as a

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61   'MAX' is an acronym for 'Metropolitan Area Express' denoting the region's light rail system which did not reach as far as Clackamas County until 2009 because of a failed ballot initiative. Cf. Abbott, Carl, *Greater Portland: Urban Life and Landscape in the Pacific Northwest* (Philadelphia: University of Pennsylvania Press, 2001), 164–165. In 2009, the goal to integrate Clackamas County into the area served by the 'MAX' was accomplished and additional plans for a second line serving Clackamas County are supposed to be realised in the near future. Cf. Abbott, Carl, *Portland in Three Centuries: The Place and the People* (Corvallis: Oregon State University Press, 2011), 166–167.

62   Interview 34, paragraph 24.

social phenomenon and the practice in form of a particular realisation as it is carried out by individuals. Susan's individual way of carrying out the practice of mobility—as far as it can be reconstructed from her statements—relies on using the car exclusively. According to her, alternative ways at least in regard to commuting to and from work exist but do not present themselves as real options because they are inconvenient to use. From this it follows that the activities which Susan performs in the area of mobility follow the logic of practicality and convenience. From a practice theoretical point of view it would therefore be inadequate to say that Susan does not act climate-friendly in the area of mobility despite of better knowledge. Instead, aspects of climate change simply do not matter when she carries out the practice of mobility because other factors—namely practicality and convenience—are responsible for what she actually does. Of course, one has to be careful when inferring from one particular way of carrying out the practice of mobility to the practice as a social phenomenon. Whether the aspects of practicality and convenience are part of the teleoaffective structure of the practice of mobility as a social phenomenon will be the subject of the analysis of the excerpts to come.

In comparison to Susan, who acknowledges that she drives the car "to work on a daily basis" although she knows about the climate-relevant consequences of these actions, Nicole presents herself as an individual whose climate-friendly actions are a direct consequence of her knowledge about climate change. However, the relation between beliefs and actions does not appear to be as causal as it seems to be at first sight. When being asked about the means of transportation she uses in her everyday life Nicole replies:

> I do have a car but I take the bus to work a lot. And I just mostly have my car on the weekends or for whenever I need to run errands. So, I prefer to take the bus. It's so much easier and, you know, even though this isn't necessarily a high-density city, it's just a lot easier. I can catch the bus to get to work immediately."
>
> Interviewer: "And you can pretty much get everywhere you want to, by bus?"
>
> Nicole: "Well, I mostly just drive it, I mean, I mostly ride it to work and home. So, I'm just going to and from work, you know, five days a week. And then, I have my car, it sits in the driveway and on the weekends I can do my stuff, you know, that I need to do like getting to the grocery store or taking the kids to doctors' appointments or things like that."[63]

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63   Interview 29, paragraphs 32–34.

According to these remarks, the crucial factor which makes Nicole use either the car or public transportation is not the issue of climate change. For commuting she uses public transportation because it is "just a lot easier". Thus, taking the bus is obviously the handiest way to get to and from work. However, for other purposes "like getting to the grocery store or taking the kids to doctors' appointments" the car seems to be more convenient to use. From a practice theoretical point of view, the activities that Nicole performs in the area of mobility follow—comparably to the case of Susan—the logic of practicality and convenience.

So far, the practice-based analysis at hand has made use of statements from interviewees who expressed climate change beliefs according to which individuals alone or together as a group have the power to make a difference. But what about the practice of mobility as it is carried out by individuals who expressed doubts that the individual can do anything against the progression of climate change? Zoe, for instance, describes the usage of the means of transportation in her everyday life as follows:

> I, we, so, my boyfriend and I share the car. And we use it about once or twice a week, maybe, maybe once a week. I get to work on the bus. Sometimes I walk. It's not very far; it's like a mile and a half to work. And so, when it's nice outside I walk; when it's raining I take the bus. Yeah, the bus is quick; it takes like ten minutes to get downtown, so, it's perfect. Yeah, I mean, we were talking about this the other day that it's actually much more of a pain to drive. Usually, we drive to go hiking. Every Saturday we go somewhere; that's when we take the car. Otherwise it's a car that just sits.[64]

As was analysed in the previous chapter, Zoe expresses her frustration over the fact that climate change must be addressed on the level of the individual but presents itself as an issue that is so big and unswayable that it discourages the individual to act by him- or herself at all. The aforementioned excerpt illustrates, however, that this climate change belief does not matter when it comes to her individual way of carrying out the climate-relevant practice of mobility. By walking or taking the bus to and from work, Zoe really does make a difference in regard to the causing factors of climate change but the driving force for her acting that way is not based on the corresponding belief. The activities she performs in the realm of mobility follow again the logic of practicality and convenience, which becomes truly obvious in her statement that she and her

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64   Interview 41, paragraph 38.

boyfriend "were talking about this the other day that it's actually much more of a pain to drive". In other circumstances—Zoe mentions hiking trips on the weekend—she makes use of the car because, as can be assumed, alternatives are either not convenient or simply do not exist after getting out of the urban area.

The same holds true for Paula who expresses most explicitly the belief that the individual cannot do anything against climate change. Her way of carrying out the practice of mobility does not differ much from Zoe's usage of different means of transportation and can also be labelled as relatively climate-friendly as she tends to use public transportation a lot:

> Interviewer: "Do you have a car?"
> Paula: "Hm."
> Interviewer: "And is that the only means of transport you use or what kind of, or how do you get around?"
> Paula: "Oh no. We have the MAX Line. The little train, you know, what do you call it? It's the train that takes you downtown, you know. We have buses. I ride the bus a lot. Or I drive over to where the MAX Line is and park there and take the train."[65]

Paula does not give reasons why she uses the car in some and public transportation in other situations. Her statement thus differs from the ones of Susan, Nicole, and Zoe who referred explicitly to aspects of practicality and convenience. However, it does not seem to be far-fetched to assume that the reasons for Paula using either the car or means of public transportation are also based on aspects of practicality and convenience.

As the preceding practice theoretical analysis of Susan's, Nicole's, Zoe's, and Paula's individual way of carrying out the practice of mobility has revealed, all four individuals have one thing in common: their doings in the area of mobility are governed by practicality and convenience. This finding is striking because Susan, Nicole, Zoe, and Paula do not agree on the question of what the individual—or rather they themselves—can do against climate change. The comparison of Susan and Nicole is especially interesting in this regard because both indeed share the belief that the individual has the power to act against climate change but Nicole adds that she does whatever she can do—which includes riding public transportation—while Susan admits that she does not do much to lower her carbon footprint—which includes sticking to using the car on a daily basis. The comparison of the excerpts taken from the interviews

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65   Interview 32, paragraphs 55–58.

with Susan and Nicole has thus shown that two individuals carrying a similar climate change belief do not necessarily perform similar actions. The analysis of Zoe's and Paula's statements on the other hand has revealed that the existence of pessimistic beliefs can easily co-exist with the performance of climate-friendly activities.

What implications derive from the aforementioned empirical findings? If one were to continue assuming a causal relation between thinking and acting or rather between beliefs and behaviour the findings of the preceding analysis would come as a surprise because no consistent behaviour could be assigned to a particular belief. By taking a practice theoretical perspective, however, the same findings perfectly make sense: when individuals carry out a practice their doings are not steered by particular beliefs, they are instead prompted by the teleoaffective structure of that practice. As could be shown by analysing the interviewees' statements, the practice of mobility as they carry it out is governed by a teleoaffective structure containing practicality and convenience. Of course, the teleoaffective structure of the practice of mobility as a social phenomenon may also comprise other factors that have not been disclosed by the empirical analysis at hand. However, the aforementioned empirical findings lead to the conclusion that practicality and convenience are not only determining factors for the way Susan, Nicole, Zoe, and Paula carry out the practice of mobility but have to be acknowledged as aspects of the teleoaffective structure of the practice of mobility in general.

5 Conclusion and Discussion

So, what conclusions can be drawn from the preceding empirical analysis? First of all it is once again worth mentioning that all interviews that were analysed for this paper contain statements, remarks or answers which reveal that the corresponding interviewees take climate change as a fact. Concerning the beliefs the interviewees express in regard to the causes of climate change, two types could be generated: While the majority attributes climate change to human activities and greenhouse gas emissions resulting from the energy consumption so common nowadays, a minority ascribes climate change to a mixture of natural cycles and a human contribution. Although a slight disagreement could be detected in regard to the question of how big the human contribution is, with Oliver there is just one interviewee coming close to being a sceptic concerning the human influence on climate change.[66] However, even

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66   Cf. footnote 50 in this article.

Oliver acknowledges that he cannot estimate the consequences of "more people in the world with more automobiles and smoke stacks". Consequently, the analysis of the 21 interviews conducted in Tacoma, Washington, and the Metropolitan Area of Portland, Oregon, has shown that while there remains disagreement in regard to the extent of the human contribution to climate change, the interviewees agree on the fact that climate change is happening and that humans have something to do with it. Of course, these findings cannot be generalised for the regions. However, the residents of the Pacific Northwest and of Portland in particular have a reputation for being extremely environmentally conscious[67] so that the aforementioned findings do not come as a surprise.

What the empirical analysis of the interview material in addition brought to light is the fact that the anthropogenic character of climate change is nearly exclusively discussed in regard to the question of what the individual can or cannot do. Again, two types of individual-related climate change beliefs could be generated: While a small minority expresses the belief that nothing can be done by the individual, the majority of interviewees voices the conviction that climate change can only be influenced by actions carried out on the level of the individual. The latter belief is often accompanied by statements—either optimistic or pessimistic—revealing the general idea that the success of changes on a broader or rather collective level depends on activities being started by individuals. In comparison to elaborations on the question of what the individual can or cannot do, aspects of climate change strategies on a collective or political level are hardly mentioned and in the rare cases that they are addressed, the respective interviewees express a preference for individual activities with collective measures only being second choice.[68] To sum up these findings, one could say that the corresponding interviewees express a

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67   Cf. Abbott, *Portland in Three Centuries*, 171–172.

68   Take, for example, 73-year-old Clarice who discusses climate change in connection to other environmental issues: "I'd like to see the individual companies, the individual cities take care of their recycling or take care of their environmental problems so that it gets down to the individual people that they realise that we have to take care. That's what I'd like to see, rather than to have a government from the top come down and say 'You gotta do this, you gotta do that'. It would be better if it came through the people. Right now, I don't know where it's coming from. It's probably a little of both. […] I think that the individual people, the individual and then in groups of individuals need to take more charge of what's happening around them. […] I don't like a government becoming bigger and bigger and bigger and then it's sort of like everybody is just [unintelligible] because they think the government is gonna tell me what to do anyway. And I don't want that. I want people to take care of themselves." (Interview 47, paragraphs 38–42)

great confidence in the power and possibilities of every single individual. However, it seems also plausible to assume that the preceding findings confirm the predominance of a value which is commonly attributed to the United States: individualism. As Robert N. Bellah et al. in their empirically-based elaboration *Habits of the Heart* have shown, "Individualism lies at the very core of American culture".[69] The findings of the study at hand strengthen the validity of this statement and demonstrate that individualism is still a value rooted so deeply in the culture of the United States that it has the power to shape certain climate change beliefs.[70]

Interestingly, the majority of interviewees who express the belief that the individual can make a difference in regard to climate change do not stick to discussing the role of the individual in general but embed this belief in elaborations on the question what they themselves can or cannot do or are already doing against climate change. By referring to the way they perform climate-relevant activities while discussing the issue of climate change many interviewees create the impression that their actions are a causal consequence of their beliefs. However, the analysis of the excerpts taken from the interview with Susan has shown that the relation between beliefs and behaviour should not be assumed to be a causal one. Susan admits that despite knowing about the climate-relevance of using the car on a daily basis, she does not change her behaviour towards more climate-friendliness. In this regard she represents the complete opposite of Nicole who states that she uses public transportation in order to act climate-friendly. Both women obviously carry the belief that individual actions can make a difference; their individual way of carrying out the climate-relevant practice of mobility, however, differs decisively. As the practice theoretical analysis has shown, this finding is no surprise because their doings in the area of mobility are not governed by their beliefs but follow the teleoaffective structure of the practice itself. Through analysing the reasons Susan and Nicole give for carrying out the practice of mobility the way they do, two factors of the teleoaffective structure could be detected: practicality and convenience. The assumption that climate change beliefs do not determine how individuals behave in the area of mobility could be supported by analysing Zoe's and Paula's corresponding statements. These interview excerpts revealed that climate-friendly behaviour is not at all precluded by beliefs doubting the climate-relevant potentials of the individual. Instead, practicality

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69   Bellah, Robert N. et al., *Habits of the Heart: Individualism and Commitment in American Life* (Berkeley, Los Angeles, London: University of California Press, 1985), 142.

70   For an elaboration of the importance of individualism in American culture in general cf. Bellah et al., *Habits of the Heart*.

and convenience could again be detected as being responsible for their individual ways of carrying out the practice of mobility.

The analysis at hand has shown that climate change beliefs do not necessarily function as a trigger for climate-friendly ways of behaviour in the field of mobility. Even though it seems tempting to ascribe climate-friendly actions to corresponding beliefs—which also could be seen by some interviewees' attempts to discuss climate change by illustrating their climate-friendly behaviour—one should not pin one's hopes on this relation. What could be demonstrated for the climate-relevant practice of mobility may very likely be valid for other practices as well: The fact that the practices individuals carry out are determined by a teleoaffective structure which does not necessarily correspond to the beliefs these particular individuals might carry. If this assumption is true the key for more environmentally and climate-friendly behaviour cannot be found in education or further attempts to make individuals even more familiar with the abstract knowledge about environmental problems or climate change. As the preceding empirical analysis has shown, the knowledge about climate change and its anthropogenic anchoring already exists. To implement a more climate-friendly way of life and the corresponding forms of behaviour can only be achieved by modifying the climate-relevant practices themselves. As the empirical analysis has exemplarily shown for the practice of mobility, individual acts of carrying out this particular practice follow a teleoaffective structure comprising practicality and convenience. In order to foster climate change mitigation efforts, it would thus be a good starting point to modify the corresponding infrastructure in a way that the usage of climate-friendly means of transportation becomes more convenient and advantageous than the usage of climate-damaging means of transportation. Of course, in a country like the United States with long distances between places this is a huge challenge. But, as the examples of Nicole, Zoe and Paula have shown, at least on the city level this challenge can be tackled.

A New Clayoquot? Examining the Convergence of First Nations and Environmental NGOs in Vancouver's Anti-Pipeline Protests

Omer Aijazi and Martin David

Abstract

Vancouver, British Columbia, Canada, the birthplace of the Greenpeace movement, has been a significant site for the articulation and enactment of multifaceted environmental consciousness. Since 2010, First Nation groups and environmental NGOs have come together to oppose the construction of the Enbridge Northern Gateway Pipeline in the form of public protests and demonstrations. Using a social networks perspective, we closely examine the nature of these protests and the convergence of First Nation groups and environmental NGOs. We argue that the Vancouver protests ultimately failed to transform into a social movement and had limited impact. While a common concern for the environment links both stakeholders in their opposition to the pipeline project, their motivations are rooted in very different epistemic concerns. For First Nation groups, resistance to the Enbridge pipeline is primarily tied to deeper political processes of regaining territorial control and ongoing struggles for cultural revival within British Columbia.

1   Introduction

In June 2014, in line with Canada's energy superpower ambitions, the Federal Government agreed to let the Calgarian energy delivery company Enbridge Inc. build its Northern Gateway pipeline, subject to 209 conditions recommended by the National Energy Board and further consultations with aboriginal communities.[1] The $6.5 billion pipeline will transport crude oil from northern Alberta to the coast of British Columbia (BC), cutting through thousands of kilometres of BC including at least 50 indigenous territories. The

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1   Government of Canada, "Government of Canada Accepts Recommendation to Impose 209 Conditions on Northern Gateway Proposal," last modified June 17, 2014, accessed February 6, 2015. http://news.gc.ca/web/article-en.do?nid=858469.

planned pipeline would transverse ecologically fragile and sensitive areas including the Great Bear Rainforest, landslide-prone mountainscapes and innumerable salmon bearing rivers and streams.[2] Oil tankers would then transport crude oil to Asian markets through ecologically sensitive and perilous coastal waters. Soon after the project was approved, opposition groups mobilised across BC with various forms of occupations, rallies and other creative methods of non-violent direct action. Opposition groups include concerned British Columbians, political parties, environmental NGOs and First Nation communities.[3] Despite being fundamentally different in their political and epistemic orientations, alliances between these differing actors have increased the political impact of the opposition movement against Enbridge.[4]

In Canada and BC, similar cross-organisational coalitions amongst unlikely allies have risen around other ecological concerns in the past.[5] In fact, BC has a strong tradition of hosting environmental organisations and shaping regional environmental sensibilities. For example, the origins of the major environmental movement Greenpeace can be traced to a residential neighbourhood in Vancouver in the heyday of newly emerging anti-war and environmental sensibilities of the 1970s.[6] Similarly, the 1993 anti-logging protests in Clayoquot Sound, Vancouver Island, BC, often cited as the largest acts of civil disobedience in Canadian history, are credited with influencing an entire generation of

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2   Levy, David A., "Pipelines and Salmon in Northern British Columbia," published by The PEMBINA Institute, October 2009, accessed February 6, 2015. http://www.pembina.org/reports/pipelines-and-salmon-in-northern-bc-report.pdf. See also Brown, Greg, Jeremy Moorhouse, and Jennifer Grant, "Opening the Door for Oil Sands Expansion," published by The PEMBINA Institute, December 2009, accessed February 6, 2015. http://pembinafoundation.ca/reports/gateway-upstream-report.pdf.

3   First Nations refers to various Aboriginal peoples in Canada. The Government of Canada recognises over 617 First Nation communities, which represent more than 50 nations or cultural groups and 50 Aboriginal languages. According to the 2011 National Household Survey, more than 1.4 million people in Canada identify themselves as an Aboriginal person, or 4 percent of the population. Over half of the Aboriginal people live in urban centres.

4   Haluza-DeLay, R., and A.V. Carter, "Joining Up and Scaling Up: Analyzing Resistance to Canada's 'Dirty Oil'," in *Activist Science and Technology Education* 9 (2014): 343.

5   For example, Willow, Anna J., "Re(con)figuring Alliances: Place Membership, Environmental Justice, and the Remaking of Indigenous-Environmentalist Relationships in Canada's Boreal Forest," *Human Organization* 71.4 (2012): 371; Willow, Anna, J., "Clear-cutting and Colonialism: The Ethnopolitical Dynamics of Indigenous Environmental Activism in Northwestern Ontario," *Ethnohistory* 56.1 (2009): 35.

6   Weyler, Rex, *Greenpeace: How a Group of Ecologists, Journalists, and Visionaries Changed the World* (New York: Rodale, 2004), 12.

environmental activists.[7] In 1997, BC had the highest density of environmental activist organisations in Canada, and some have even described their work as being "militant".[8] Another important factor that makes BC unique is that much of the province remains unceded indigenous territory.[9] This means that indigenous communities are still able to apply traditional laws to their lands and territories, which has interesting implications for land use and governance. A growing body of interdisciplinary literature has problematised existing binaries between nature and culture, stressing their interdependencies for indigenous lifestyles in BC and elsewhere.[10] These works have emphasised that indigenous place-based lifestyles are intricately linked with environmental stewardship, nurturing differing environmental sensibilities that are often considered as disruptive by the Canadian state and companies such as Enbridge.[11]

7   Walter, Pierre, "Adult Learning in New Social Movements: Environmental Protest and the Struggle for the Clayoquot Sound Rainforest," *Adult Education Quarterly* 57.3 (2007): 248. See also West, Ben, "Largest 'No Enbridge' Rally Expected in Vancouver May 10 as Harper's Decision Looms," published May 1, 2014, accessed January 3, 2015. http://www.forestethics. org/news/no-enbridge-rally-may-10-harpers-decision-looms.

8   Blake, Donald E., Neil Guppy, and Peter Urmetzer, "Canadian Public Opinion and Environmental Action: Evidence from BC," *Canadian Journal of Political Science* 30.30 (1997): 455.

9   Unceded territory refers to indigenous territories that were obtained by the Crown without any formal treaties with First Nation groups as mandated by colonial law. This means aboriginal land rights to these territories remain unextinguished. The British Columbia Treaty Process (BCTP), established in 1992, is responsible for negotiating these unextinguished land right claims. In recognition and respect of the struggles of indigenous territorial land right claims in BC, in 2014, the City of Vancouver formally declared itself as being on unceded aboriginal territory (Meiszner, Peter, "City of Vancouver Formally Declares City is on Unceded Aboriginal Territory," *Global News*, June 25, 2014, accessed, January 10, 2015. http://www.globalnews.ca/news/1416321/city-of-vancouver-formally-declares-city-is-on-unceded-aborginal-territory/).

10   Windsor, J.E., and J.A. McVey, "Annihilation of Both Place and Sense of Place: The Experience of the Cheslatta T'En Canadian First Nation within the Context of Large-scale Environmental Projects," *The Geographical Journal* 171.2 (2005): 146–165; Willems-Braun, B., "Buried Epistemologies: The Politics of Nature In (Post) Colonial British Columbia," *Annals of the Association of American Geographers* 87.1 (1997): 3–31; Trigger, D., and J. Mulcock, "Forests as Spiritually Significant Places: Nature, Culture and Belonging in Australia," *The Australian Journal of Anthropology* 16.3 (2005): 306–320; Berkes, F., *Sacred Ecology* (New York: Routledge, 2012); Whatmore, Sarah, *Hybrid Geographies: Natures Cultures Spaces* (London: Sage, 2002).

11   Beckford, C.L., C. Jacobs, N. Williams, and R. Nahdee, "Aboriginal Environmental Wisdom, Stewardship, and Sustainability: Lessons from the Walpole Island First Nations, Ontario, Canada," *The Journal of Environmental Education* 41.4 (2010): 239–248; Turner, N.J.,

In this article, we explore why and how environmental NGOs entrenched within settler colonial formations have formed cooperative relationships of solidarity with First Nation communities. While concerns around environment conservation and dangers of oil spills[12] links both dynamic actors to the pipeline project, their motivations are rooted within very different epistemic concerns. We argue that indigenous resistance to the pipeline project is inexplicably linked to ongoing struggles for decolonisation, governance and cultural revival in BC. However, we do not want to homogenise First Nation groups and environmental NGOs within BC or elsewhere or simplify their politics. We are cognisant of the rich diversity of viewpoints found within indigenous communities and environmental organisations that shape their discursive as well as action-oriented opposition to the construction of the Northern Gateway pipeline. We also note settler colonial formations in BC for their structural dimensions in their shape shifting, versatile and resilient forms, and not simply as homogenous, universal events.[13]

We start this paper by outlining our theoretical framework and giving a brief overview of environmentalism and indigenous opposition to the Northern Gateway Pipeline. Then we proceed by presenting a series of case studies of protests and rallies against the Northern Gateway pipeline held in Vancouver, BC over the years 2013 and 2014.[14] Finally, we conclude the chapter by offering

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M.B. Ignace, and R. Ignace; "Traditional Ecological Knowledge and Wisdom of Aboriginal Peoples in British Columbia," *Ecological Applications* 10.5 (2000): 1275–1287; Gregory, R., and W. Trousdale, "Compensating Aboriginal Cultural Losses: An Alternative Approach to Assessing Environmental Damages," *Journal of Environmental Management* 90.8 (2009): 2469–2479; Paci, C., A. Tobin, and P. Robb. "Reconsidering the Canadian Environmental Impact Assessment Act: A Place for Traditional Environmental Knowledge." *Environmental Impact Assessment Review* 22.2 (2002): 111–127.

12   The probability of oil spills provides much of the vocabulary for intense NGO campaigning against the newly approved pipeline. According to a recent university study Enbridge drastically underestimates the likelihood of oil spills from its Northern Gateway project (cf. Moore, Dene, "Northern Gateway Risks: SFU Research Says Enbridge Underplays Likelihood Of Spill," *Huffington Post British Columbia*, February 5, 2013, accessed January 26, 2015). In fact the company has a long track record of oil spills. For example in 2010, a massive oil spill in Michigan, US resulted in the contamination of the Kalamazoo River and numerous wetlands with nearly three million litres of crude oil.

13   Alfred, Taiaiake, and Jeff Corntassel, "Being Indigenous: Resurgences against Contemporary Colonialism," *Government and Opposition* 40.4 (2005): 597, and also Wolfe, Patrick, *Settler Colonialism and the Transformation of Anthropology* (London: Cassell, 1999).

14   These accounts are constructed mainly from newspaper sources, webpages of environmental organising groups and social media groups.

an analysis of these recent protests in relation to our theoretical arguments and insights.[15]

2 Environmentalism and Indigenous Opposition to the Northern Gateway Pipeline

> We just came off a salmon season where we canned and smoked for the winter. Soon the whole family is going out to harvest clams, cockles and crabs. It is as simple as that with us. It is who I am. Every year my calendar is run by the sea and the land. You can't take away that essence of me. The money from pipeline is there for a short time. The land is there forever.[16]
>
> Our lands and waters are not for sale, not at any price. We want no part of Enbridge's project and their offers are worthless to us when compared to the importance of keeping our lands, rivers and the coast free of crude oil spills. What Enbridge is offering is the destruction of our lands to build their project, and the risk of oil spills for decades to come, which could hurt everyone's kids and grandkids.[17]

It is difficult to offer a singular definition of environmentalism especially in relation to a particular geographic space such as BC, Canada. Brechin stresses that environmentalism "is most likely a collection of multiple movements beyond simply a North-South split",[18] contributing to a "global civil society".[19] Perhaps the global emergence of environmentalism can be explained with Roland

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15   We would like to acknowledge that both authors of this chapter have benefitted from the traditional and unceded territory of the Musqueam and Coast Salish people in various ways, and have been guests in the territories of the indigenous peoples of this land. For this, we offer many layers of thanks.

16   Nancy Nyce, Haisla Nation, Nana ki'la Guardians, 2011, quoted in Swift, A. et al., "Pipeline and Tanker Trouble: The Impact to BC's Communities, Rivers, and Pacific Coastline from Tar Sands Oil Transport," published by Natural Resources Defense Council, 2011, accessed January 7, 2015. http://www.livingoceans.org/sites/default/files/pipeline-tanker-trouble.pdf.

17   Chief Larry Nooski, Nadleh Whut'en First Nation, member Nation of the Yinka Dene Alliance, quoted in Swift et al., "Pipeline and Tanker Trouble," 20.

18   Brechin, Steven R., "Objective Problems, Subjective Values, and Global Environmentalism: Evaluating the Postmaterialist Argument and Challenging a New Explanation," *Social Science Quarterly* 80.4 (1999): 806.

19   Rodrigues, Maria, and Guadelupe Moog, Global Environmentalism and Local Politics: *Transnational Advocacy Networks in Brazil, Ecuador, and India* (New York: State University of New York Press, 2004), 8.

Ingelhart's "Silent Revolution" thesis, a value change from materialist to post-materialist values.[20] Keck and Sikkink understand environmentalism as a frame of relationships "within which the relations among a variety of claims about resource use, property, rights, and power may be reconfigured".[21] Therefore, while the struggles of environmental NGOs in BC can be localised to specific issues, they remain embedded within larger global networks, participation in which closely informs their agendas and public discourses.[22]

An examination of the networked nature of participation in environmental organisations across BC suggests that weak social ties are more important for encouraging participation in environmental advocacy groups than strong ones.[23] Despite the lack of clarity on what exactly differentiates a weak social relation from a strong one, authors like Granovetter have also argued that informal social relations (such as workplace acquaintances) are more crucial for inclusion in environmental advocacy groups as opposed to formal, strong ties (such as families and friends).[24]

Various scholars have offered shifting understandings of environmental NGOs. Some works have limited their roles to functions such as research, monitoring, awareness raising, negotiation reporting, domestic signalling, and facilitating ratifications. Others have focussed on understanding their contributions to drawing out the "political implications of biophysical trends" as well as

20   Brooks, Clem, and Jeff Manza, "Do Changing Values Explain The New Politics? A Critical Assessment of the Postmaterialist Thesis," *The Sociological Quarterly* 25.4 (1994): 653.

21   Keck, Margaret, and Kathryn Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics* (New York: Cornell University Press, 1998), 121.

22   Keck and Sikkink attribute the vast growth of international environmental advocacy organisations during the 1980's to incidents like Bhopal and Chernobyl: "between 1985 and 1990 membership in the Environmental Defense Fund (EDF) doubled, then doubled again between 1990 and 1991. The Natural Resources Defense Council (NRDC) grew 2.7 times between 1985 and 1990, as did the Nature Conservancy. The World Wildlife Fund-US grew 5.6 Times, and Greenpeace more than doubled (from 400,000 to 850,000). Total membership of ten organisations for which continuous data are available grew from 4,198,000 in 1976 to 5,816,000 in 1986 and 8,270,000 in 1990" (Keck, and Sikkink, *Activists Beyond Borders*, 128).

23   Tindall, David B., "Social Networks, Identification and Participation in an Environmental Movement: Low-medium Cost Activism within the BC Wilderness Preservation Movement," in *Canadian Review of Sociology* 39.4 (2002): 413–452.

24   Granovetter, Mark S., "The Strength of Weak Ties," *American Journal of Sociology* 78.6 (1973): 1360–1380; Granovetter, Mark S., "The Strength of Weak Ties: A Network Theory Revisited," *Sociological Theory* 1.1 (1983): 201–233. Granovetter clarifies in the latter article that not all weak ties may enhance participation in environmental advocacy depending on the origins, modes and contexts in which these relationships are formed.

challenging the limitations of traditional state-centric systems.[25] More specifically, the emergence of environmentalism in BC has been approached via frameworks of social networks, social movements and social learning.[26] Blake, Guppy, and Urmetzer were the first to explore the link between environmental advocacy, lifestyles and political values within BC:

> Concerns about the local environment as well as more generalized pro-environmental beliefs both lead to green behaviour […]. The same is true of post-materialism. However, concern about the local environment has its greatest effect on consumer behaviour and green activism, suggesting that direct experience with environmental problems is itself an important stimulus to action.[27]

Pierre Walter has examined the famous Clayoquot Sound anti-logging protests in considerable detail.[28] An environmental advocacy group called Friends of Clayoquot Sound (FOCS) initiated these protests. FOCS was founded in 1979 on Meares Island, BC following an announcement that the provincial government had "approved the clear-cutting of Meares Island, across from the town of Tofino in Clayoquot Sound".[29] According to the FOCS webpage:

> FOCS has a long track record of working for conservation in Clayoquot Sound. Logging protests and campaigns throughout the 1980s culminated in the 1993 Clayoquot Summer protests. Organised by FOCS, they succeeded in significantly slowing the rate of logging, and the intact valleys have not been logged yet—there is still the opportunity to protect this globally rare and magnificent ecosystem.[30]

25   Princen, Thomas, Matthias Finger, and Jack P. Manno, "Translational Linkages," in *Environmental NGOs in World Politics, Linking the Local and the Global*, vol. 2, ed. Thomas Princen and Matthias Finger (New York: Routledge, 2001), 217.

26   Walter, "Adult Learning in New Social Movements;" Finger, Matthias, "NGOs and Transformation: Beyond Social Movement Theory," in *Environmental NGOs in World Politics, Linking the Local and the Global*, vol. 2, ed. Thomas Princen and Matthias Finger (New York, Routledge, 2001), 48–68; Tindall, "Social Networks, Identification and Participation."

27   Blake, Guppy, and Urmetzer, "Canadian Public Opinion," 469.

28   Walter, "Adult Learning in New Social Movements."

29   Ibid., 253.

30   Friends of Clayoquot Sound (FOCS), "FOCS Campaigns," last modified November 26, 2014, accessed January 3, 2015. http://focs.ca/campaigns/.

Walter argues that these protests were unique since they enabled knowledge transfers across a diverse range of stakeholders including First Nation groups and environmental activists.[31] This led to the consolidation of "cross-border" cooperation as an important strategy to fight the "state's apparatus of repression".[32] Similar strategies have been used by indigenous groups who have used cultural exchanges and social networks to fashion "territorial initiatives that, when taken together, channel popular environmentalism, provincial forestry policies, and ancestral ethno-ecology into collective identity, action and authority".[33]

Various competing frameworks such as multiculturalism, race, self-determination and transitional justice have attempted to conceptualise the ambiguous place of First Nation communities within an extractivist Canadian economy[34] and their uneasy relationship with the Canadian state.[35] However, these approaches are noted for their limited engagements with the environment in their conceptual formulations. Moving forward from the normative belief that the environment is not a neutral space,[36] we use the notion of indigenous resurgence to inform our discussions and analysis in this chapter.[37] We understand indigenous resurgence as interlinked processes of decolonisation

31   Walter, "Adult Learning in New Social Movements," 270.

32   Ibid., 260.

33   Larsen, Soren C., "Promoting Aboriginal Territoriality Through Interethnic Alliances: The Case of the Cheslatta T'en in Northern BC," *Human Organization* 62.1 (2003): 74.

34   An extractivist economy is one that prioritises resource extraction as an important driver of national development. See Veltmeyer, H., and P. Bowles, "Extractivist Resistance: The Case of the Enbridge Oil Pipeline Project in Northern British Columbia," *The Extractive Industries and Society* 1.1 (2014): 59–68.

35   See, for example, Cannon, M., and L. Sunseri, ed., *Racism, Colonialism, and Indigeneity in Canada* (Ontario: Oxford University Press, 2011); Coulthard, G.S., "Subjects of Empire: Indigenous Peoples and the 'Politics of Recognition' in Canada," *Contemporary Political Theory* 6.4 (2007): 437–460; Légaré, E.I., "Canadian Multiculturalism and Aboriginal People: Negotiating a Place in the Nation," *Identities Global Studies in Culture and Power* 1.4 (1995): 347–366; Regan, P., *Unsettling the Settler Within: Indian Residential Schools, Truth Telling, and Reconciliation in Canada* (Vancouver: UBC Press, 2010); Thobani, S., *Exalted Subjects: Studies in the Making of Race and Nation in Canada* (Toronto: University of Toronto Press, 2007).

36   Altamirano-Jimenez, Isabel, *Indigenous Encounters with Neoliberalism: Place, Women, and the Environment in Canada and Mexico* (Vancouver: UBC Press, 2013).

37   Cf. Simpson, L., "Our Elder Brothers: The Lifeblood of Resurgence," in *Lighting the Eighth Fire*, ed. L. Simpson (Winnipeg: Arbeiter Ring Publishing, 2008), 73–88.

and healing within settler colonial formations.[38] These include reclamation and regeneration of one's relational, place-based existence by re-connecting to the natural world through ceremony or otherwise, reflecting various dimensions of spirituality, culture, politics, economics and social relationships.[39] Speaking traditional languages at home, replanting traditional foods and sacred plants and only eating food that has been hunted or grown by indigenous peoples are some examples of indigenous resurgence practices.[40] Furthermore, we note the linkages between indigenous resurgence (understood as the deliberate revival of place-based cultural practices) and territorial rights in BC and argue that First Nations opposition to the Enbridge pipeline project is an extension of unresolved contestations over indigenous lands without which there can be no cultural reclamation. Postcolonial theorist Edward Said has reminded us that struggles over land are essentially about "ideas, forms, [...] images, and imaginings"[41] since land informs a "field of 'relationships of things to each other' [...] a way of knowing, experiencing, and relating with the world".[42] Therefore, the proposed Enbridge pipeline can be understood as an extension of colonial sensibilities, which constrain "possible ways of being" by transforming "what land 'is'".[43]

Patrick Wolfe argues that in settler colonial formations, land is the "irreducible element"[44] as settlers seek to "make indigenous land their home and source of capital".[45] Noting that colonialism was experienced unevenly in different parts of the world, land, its expropriation and transformation were also

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38   Middleton, Elisabeth, "A Political Ecology of Healing," *Journal of Political Ecology* 17.1 (2010): 11. The interrelatedness of decolonisation and healing practices are well articulated by Middleton, who writes: "healing may seem impossible without some decolonization [...] healing efforts are challenged by the fact that colonial structures remain in place. As such, decolonization facilitates the ability to heal."

39   Corntassel, J., "Re-envisioning Resurgence : Indigenous Pathways to Decolonization and Sustainable Self-determination," *Decolonization: Indigeneity, Education & Society* 1.1 (2012): 88.

40   Ibid.; Goodyear-Ka'ōpua, N., "Rebuilding the 'Auwai: Connecting Ecology, Economy and Education in Hawaiian Schools," *AlterNative: An International Journal of Indigenous Scholarship*, 5.2 (2009): 46–77.

41   Said, Edward, *Culture and Imperialism* (New York: Vintage Books, 1993), 7.

42   Coulthard, "Subjects of Empire," 79.

43   Shaw, Karena, *Indigeneity and Political Theory: Sovereignty and the Limits of the Political* (London: Routledge Press, 2008), 167.

44   Wolfe, Patrick, "Settler Colonialism and the Elimination of the Native," *Journal of Genocide Research* 8.4 (2006): 388.

45   Tuck, Eve, and K. Wayne Yang, "Decolonization Is Not a Metaphor," *Decolonization: Indigeneity, Education & Society* 1.1 (2012): 5.

salient feature of BC's colonial experience.[46] In the context of the Songhees reserve in Victoria, BC, Mawani discusses the consolidation of colonialism in Western Canada through the production of specific spatial configurations seeking to delimit who belongs where. She notes: "as was the case elsewhere, colonial power in Canada's West was determined by who occupied, managed and controlled the physical space".[47]

Facilitated by a range of cultural practices, spatial transformations in BC marked the province's transition from a mercantilist economy centred around the fur trade to an industrialised, resource extracting economy based on mining, forestry, fishing, canneries and agriculture. This had profound consequences on the cultural and spiritual practices of indigenous populations, which do not necessarily maintain a separation between nature and culture and whose identity is often tied to land.[48] For example, suppression of indigenous fire regimes and the introduction of invasive species led to massive transformation of Lekwungen homelands and their surrounding ecosystems,[49] interfering with indigenous economies, food systems, governance and legal orders, as well as relationships to and within ecosystems.[50] Some researchers

46   Harris, C., *The Resettlement of BC: Essays on Colonialism and Geographical Change* (Vancouver: University of BC Press, 1997).

47   Mawani, Renisa, "Legal Geographies of Aboriginal Segregation in BC: The Making and Unmaking of the Songhees Reserve, 1850–1911," in *Isolation: Places and Practices of Exclusion*, ed. Carolyn Strange and Alison Bashford (New York, Routledge, 2003), 164.

48   Cunningham, C., and F. Stanley, "Indigenous by Definition, Experience, or World View: Links between People, their Land, and Culture Need to Be Acknowledged," *British Medical Journal* 327.7412 (2003): 403–404; Royal, T.A.C., "Indigenous Worldviews: A Comparative Study. Report for Ngāti Kikopiri, Te Wānanga-o-Raukawa, Te Puni Kōkiri," published by Fulbright New Zealand, Winston Churchill Memorial Trust, February 21, 2002, accessed January 5, 2015. http://static1.squarespace.com/static/5369700de4b045a4e0c24bbc/ t/53fe8f49e4b06d5988936162/1409191765620/Indigenous+Worldviews; Wilson, K., and E.J. Peters, "'You Can Make a Place for it': Remapping Urban First Nations Spaces of Identity," *Environment and Planning* 23.3 (2005): 395–413.

49   Lea, T., "Historical Garry Oak Ecosystems of Vancouver Island, British Columbia, pre-European Contact to the Present," *Davidsonia* 17.2 (2006): 34–50.

50   Ames, Kenneth M., "Intensification of Food Production on the Northwest Coast and Elsewhere," in *Keeping it Living: Traditions of Plant Use and Cultivation on the Northwest Coast of North America*, ed. Douglas Deur and Nancy Turner (Seattle: University of Washington Press, 2005), 67–100; Reo, Nicholas, and Angela Parker, "Re-thinking Colonialism to Prepare for the Impacts of Rapid Environmental Change," *Climatic Change* 120.3 (2013): 671–682; Turner, Christina, "Photos: Defend Our Climate Vancouver Rally," published May 12, 2012, accessed January 15, 2015. http://rabble.ca/news/2014/05/photos-defend-our-climate-vancouver-rally.

have even linked indigenous displacement from their traditional territories to low health indicators.[51]

The proposed Enbridge pipeline will pass through important indigenous landscapes and waterscapes, which First Nation communities rely on for their culture, livelihoods, community and health. Potential devastation by the pipeline (such as via oil spills and other accidents) endangers the continuation of indigenous lifestyles and undermines their historical efforts at protecting their environments for future generations. It is feared that the project endangers habitats of bears as well as salmon, whales, orcas and other marine life, which are central to indigenous creation stories, song lines and ways of relating to the world. An innovative research report titled "Being Gitka'a'ata: A Baseline Report on Gitka'a'ata Way of Life, a Statement of Cultural Impacts Posed by the Northern Gateway Pipeline," highlights the specific cultural threats posed by the Northern Gateway Pipeline on the Gitka'a'ata Nation's way of life.[52]

For these reasons, the pipeline proposal has been the target of strong opposition from indigenous groups across BC. This opposition has manifested itself in two forms. One being the use of traditional,[53] national and international law to challenge the project in Canadian courts and the second in the form of protests and collective action. Coalition building amongst First Nation groups has facilitated the organisation of protests. One such example is the Yinka Dene Alliance, which is a coalition of six First Nations from northern BC who, in addition to utilising law-based mechanisms, also organise various public protests across Canada.

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51   Foliaki, S., and N. Pearce, "Prevention and Control of Diabetes in Pacific People," *British Medical Journal* 327.7412 (2003): 437; Mathews, J.D., "Historical, Social and Biological Understanding Is Needed to Improve Aboriginal Health," *Recent Advances in Microbiology* 5 (1997): 257–334.

52   Satterfield, Terre, et al., "Being Gitka'a'ata: A Baseline Report on Gitka'a'ata Way of Life, a Statement of Cultural Impacts Posed by the Northern Gateway Pipeline, and a Critique of the ENGP Assessment Regarding Cultural Impacts," published by Gitga'at First Nation, December 2013, accessed February 6, 2015. http://www.gitgaat-resources.ca/wp-content/uploads/2013/12/Gitga_at_First_Nation_-_Gitga_at_ENGP_Cultural_Impacts_Report_FINAL_-_A2K4X3-copy.pdf.

53   West Coast Environmental Law (WCEL), "First Nations that Have Declared Opposition to Proposed Enbridgetanker & Pipeline Project," last modified December 31, 2011, accessed January 9, 2015. The main Indigenous law based declarations opposing the pipeline include the Coastal First Nations Declaration which bans tar sands tankers on the north coast (March 2010), the Save the Fraser Declaration banning tar sands pipelines and tankers in the Fraser watershed, and on the north and south coasts (signings in Nov/Dec 2010 and Dec 2011), and the St'át'imc Chiefs Council Resolution (October 2010).

3   Vancouver Protests against the Enbridge Northern Gateway
Pipeline in 2013 and 2014

Since 2010, Vancouver has been a significant site for opposition of the con-
struction of the Enbridge Northern Gateway Pipeline in BC. Subsequently, we
focus on anti-pipeline protests in Vancouver that were taking place on Novem-
ber 15, 2013, May 10, 2014, and June 17, 2014.

In the November 2013 rally outside Science World, Vancouver, organisers
the climate protection network Defend Our Climate, a Canadian NGO cam-
paigning for climate protection.[54] The organisation is a network connecting
some hundred "grass roots organizations including First Nation groups and
NGOS".[55]

In the November 2013 rally outside Science World, Vancouver, organisers
expected speeches from "representatives of First Nations and civil society or-
ganizations" like the "Wilderness Committee, and LeadNow, as well as repre-
sentatives from labour and business".[56] A prominent First Nation leader
warned there would be political consequences in BC if the Federal Govern-
ment approved the proposed pipeline.[57] The executive director of the Coastal
First Nations stated, "We have 21 Conservative MPs[58] in this province, and if
Stephen Harper approves this, those 21 MPs are going to be in the fight of their
lives, and they are going to lose big time."[59] This so-called "Vancouver No

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54   Vernon, Caitlyn, and Torrance Coste, "Why May 10 Is a Critical Day to Defend Our Cli-
        mate," published May 5 2014, accessed January 2, 2015. http://www.straight.com/
        news/638851/why-may-10-critical-day-defend-our-climate.

55   Defend Our Climate, "Defend Our Climate Featured: 'Brand Stories We Love'," last modi-
        fied May 26, 2014, accessed January 8, 2015. http://www.defendourclimate.ca. Among the
        biggest environmental organisations united by the Defend Our Climate-network are lead-
        now.ca, Gathering of Nations, Greenpeace, équiterre, The Council of Canada, Tar Sands
        Solutions Network, ForestEthics Advocacy, environmental defense, Ecology Ottawa,
        Sierra Club BC, Pipe Up Network, Sum of Us, 350, Dogwood Initiative, notankers.ca, and
        the Wilderness Committee ("Defend Our Climate").

56   West, Ben, "Saturday Rally in Vancouver A 'Critical Moment' in Enbridge Campaign," pub-
        lished November 14, 2013, accessed January 3, 2015. http://www.forestethics.org/news/
        saturday-rally-vancouver-critical-moment-enbridge-campaign.

57   Alarcon, Krystle, "Thousands Protest Enbridge in Vancouver: Video," published November
        17, 2013, accessed January 9, 2015. http://www.vancouverobserver.com/environment/pro-
        testing-proposed-enbridge-pipeline-science-world-defend-our-climate-rally-video.

58   MP stands for "member of parliament".

59   Ibid.

Enbridge Pipeline Rally" was a flagship event in the national Defend our Climate day of action.[60]

Ben West, "Tar Sands Campaign Director" at ForestEthics, a local environmental group organising protests in Vancouver, claimed that the event "could turn out to be our generation's Clayoquot Sound".[61] This underlines West's understanding of his activity as a social movement. Different accounts of exact participant numbers exist, and a 2014 news article estimates that the November 2013 rally was at least 5,000 participants strong.[62] Different speakers were expected like "Art Sterritt of the Coastal First Nations, Skeena-Bulkley Valley MP Nathan Cullen, Yinka Dene Alliance representative Jasmine Thomas, local Vancouver high school climate activist Sam Harrison, plus live music and other special guests and activities".[63] The event was characterised by Turner as follows: "Last Saturday May 10, the Defend Our Climate rally happened across Canada. People gathered to protest Big Oil, fracking in Canada, Enbridge's pipelines and to demand that Canadian politicians make climate justice a priority."[64]

At the forefront of the May 2014 rally at sunset beach, Amy George of Tsleil-Waututh Nation (North Vancouver) stated that the role of her people was changing from stewards of the environment to its protectors.[65] She described how opposition to the pipeline is essentially about the continued existence of her people and described the contamination of fish and wildlife near the Alberta tar sands where leaks from tailing ponds are contaminating the river with arsenic, cadmium, chromium, lead, mercury and nickel.[66] She stated that the air, water and food they depend on as a community are at risk not just for them but also for subsequent generations.[67]

It is hard to make exact estimates about the number of participants. The Vancouver Sun counted "more than a thousand"[68] people participating in an online post, followed by Facebook comments criticising this low estimate,

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60   West, "Saturday Rally in Vancouver."

61   Ibid.

62   Crawford, Tiffany, "More than a Thousand Protesters Rally against Northern Gateway Pipeline in Vancouver," *The Vancouver Sun*, May 10, 2014, accessed January 28, 2015. http://www.vancouversun.com/news/More+than+thousand+protesters+rally+against+Northern+Gateway+pipeline+Vancouver/9827485/story.html.

63   West, "Saturday Rally in Vancouver."

64   Turner, "Photos: Defend Our Climate."

65   Richardson, Don, "No Enbridge Rally," *The Source*, June 10, 2014, accessed January 8, 2015.

66   Ibid.

67   Ibid.

68   Crawford, "More than a Thousand Protesters."

which spoke of "thousands". The journalists Embree and Prystupa from the Vancouver Observer quote Kate Hodgson, representative of the organisation Kids for Climate Action: "Enbridge wouldn't be able to get 5,000 people out on a cloudy Saturday afternoon to support its pipeline."[69] But Global News also reported "more than 1,000"[70] and retrospective reporting from the Huffington Post BC on May 12th confirmed "more than 1,000 people." This suggests that fewer people than were at the November 2013 gathering attended the second event in May 2014.

In June 2014, after the federal government conditionally approved the Enbridge pipeline, hundreds of residents including First Nation groups flooded the streets of Vancouver, blocking major intersections and holding play cards and posters chanting, "Defend our coast!" and "No pipelines!"[71] Grand Chief Stewart Phillip, president of the Union of BC Indian Chiefs which is a coalition of 31 First Nations and tribal councils, addressed the large crowds: "It's official. The war is on."[72] He added, "there will be the need to go out onto the land and onto the waters and physically stop any effort on the part of Enbridge to do preparatory work, site preparation, surveying while this matter is in the courts."[73] The Union of BC Indian Chiefs set the mood of the protest and issued the following statement:

> Today, we unequivocally reject the Harper Government's decision to approve the Enbridge Northern Gateway tanker and pipelines project and First Nations will immediately go to court to vigorously pursue all lawful means to stop the Enbridge project. We have governed our lands,

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69   Embree, Zack, and Mychaylo Prystupa, "Thousands Rally against Enbridge Northern Gateway: Photos," *Vancouver Observer*, May 11, 2014, accessed January 4, 2015. http://www.vancouverobserver.com/news/thousands-rally-against-enbridge-northern-gateway-photos.

70   Tam, Christine, "More than 1,000 rally against Northern Gateway Pipeline in Vancouver," *Global News*, May 10, 2014, accessed January 10, 2015. http://www.globalnews.ca/news/1323708/more-than-1000-rally-against-northern-gateway-pipeline-in-vancouver/.

71   Judd, Amy, "Gallery: Large Anti-Pipeline Protest Following Northern Gateway Decision," *Global News*, June 17, 2014, accessed January 20, 2015. http://www.globalnews.ca/news/1400458/gallery-large-anti-pipeline-protest-following-northern-gateway-decision/.

72   McCauley, Lauren, "Northern Gateway Pipeline Opponents: This Means 'War'." *The Canadian Progressive*, June 20, 2014, accessed January 6, 2015. http://www.canadianprogressiveworld.com/2014/06/20/northern-gateway-pipeline-opponents-means-war/.

73   Bailey, Ian, "'The War is On': Protesters Set Sights on Harper after Northern Gateway Decision," *The Globe and Mail*, June 18, 2014, accessed January 12, 2015. http://www.theglobeandmail.com/news/british-columbia/the-war-is-on-protesters-set-sights-on-harper-after-northern-gateway-decision/article19214575/.

in accordance to our Indigenous laws, since time immemorial. Our inherent Title and Rights and our legal authority over our respective territories have never been surrendered. Our inherent rights are human rights constitutionally enshrined, judicially recognized and embodied in international legal instruments including the United Nations' Declaration on the Rights of Indigenous Peoples. This project, and the federal process to approve it, violated our rights and our laws. We are uniting to defend our lands and waters of our respective territories. Our rights and laws compel us to act. Enbridge's Northern Gateway tanker and pipeline project exposes all communities from Alberta to the Pacific Coast to the undeniable risk of pipeline and supertanker oil spills. First Nations and the majority of British Columbians believe this project poses an unacceptable risk to the environment, the health, the safety and livelihoods of all peoples throughout this province. We will defend our territories whatever the costs may be.[74]

Other community groups working with First Nation groups were also present at the protest. Mona Woodward, executive director of the Aboriginal Front Door Society stated: "It's more than disrespectful [...] it's the end of safe drinking water, it's also the end of Mother Earth."[75]

Enbridge has responded to the growing opposition and public dissent against the Northern Gateway project by reiterating its commitment to environmental stewardship and reaffirming its relationships with BC and First Nation communities. Former Enbridge executive vice president Janet Holder stated in a press statement:

As a British Columbian, I am personally committed, as is Northern Gateway, to building a pipeline project that meets the highest possible safety and environmental standards anywhere in the world and a project that creates new jobs and opportunities for British Columbians [...]. At

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74   Union of BC Indian Chiefs, "Joint News Release: First Nations Going to Court United Against Enbridge's Northern Gateway Project," Published June 17, 2014, last modified June 17, 2014, accessed January 15, 2015. http://www.ubcic.bc.ca/News_Releases/UBCIC-News06171401.html#axzz34zyrdVmC.

75   Uechi, Jenny, "In their Own Words: Demonstrators Speak Out Against Harper's Enbridge Pipeline Decision," *Vancouver Observer*, June 18, 2014, accessed January 3, 2015. http://www.vancouverobserver.com/news/defiant-pipeline-opponents-rally-against-northern-gateway-approval.

Northern Gateway, we are driven by our responsibility to do what's right for BC's economy and for BC's environment.[76]

Similarly, Enbridge chief executive officer (CEO) Al Monaco said in another press release:

Reengaging the First Nations is a big priority for us. What is crystal clear is that safety and environmental protection have to come first [...]. Enbridge would be continuing to engage with BC communities and Aboriginal bands to build further trust where we have not been able to do to date.[77]

Enbridge has also launched a massive, multimillion-dollar media campaign that attempts to highlight the corporation's commitment to environmental stewardship.[78] These include a series of carefully crafted television commercials that have been heavily criticised for being deeply political aimed at shifting viewer perceptions and ideologies. Similarly, in an attempt to increase transparency, the corporation has also set up a website dedicated to the Northern Gateway project with a section titled "Ask Us Anything". This section invites questions about the project and posts responses to them.[79]

4   One Concern—Different Motives?

In the following section we examine the complex relationship between First Nation groups and environmental NGOs in British Columbia more thoroughly. As mentioned, the ForestEthics network organised anti-pipeline campaigns in metropolitan Vancouver, serving as an umbrella organisation for a variety of stakeholders under the direction of the Defend Our Climate network, including First Nation groups.[80] Ben West, executive director of the ForestEthics

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76   APTN National News (APTN), "Harper Government Approves Enbridge's Northern Gateway Pipeline Project," last modified June 17, 2014, accessed February 6, 2015. http://aptn.ca/news/2014/06/17/ottawas-approval-enbridge-pipeline-spark-defining-moment/.

77   Ibid.

78   Hamilton, Gordon, "Enbridge Launches Multimillion-Dollar Ad Campaign to Combat B.C. Pipeline Opposition," *The Vancouver Sun*, May 30, 2012, accessed February 6, 2015. http://www.vancouversun.com/business/2035/Enbridge+launches+multimillion+dollar+campaign+combat+pipeline+opposition/6698138/story.html.

79   Northern Gateway Homepage, accessed February 08, 2015. http://www.gatewayfacts.ca/.

80   Crawford, "More than a Thousand Protesters."

network, Tanker Free BC, and the Wilderness Committee, elaborated on the nature of this activists network: "The organizing of this campaign has highlighted the diversity and creativity of this strong and growing social movement. This isn't really a protest, this event is a celebration of the power of people over massive corporations."[81] West explicitly highlights a social movement character, opposing the power of corporations with democratic means. West further links both, the climate change discourse and First Nations' land claims: "It's about working together to heal the wounds of past and current injustices done to First Nations people, and it's about doing the right thing for the global community in the age of climate change."[82] West clearly links colonial and neo-colonial discourses of injustice against First Nations with the current global climate change debate. Therefore, hopes have been expressed by West that environmental protests against Enbridge might gather into a 1993-like event: "If the government pushes forward and approves Enbridge they will pay a heavy price at the ballot box, and there will be protests on a scale that make Clayoquot Sound look like a walk in the park."[83]

Considering the fact that the Canadian National Energy Board decided in favour of the pipeline,[84] it seems that until today these protests were unsuccessful in stopping the pipeline project.

Hence, it is worthwhile to compare the nature of the Vancouver protests with the events of 1993 on Vancouver Island. Pierre Walter attributes the spreading of the Clayoquot movement to "the network of local environmental NGOs and activists that helped to catalyse the movement—above all, Friends of Clayoquot Sound, Western Canada Wilderness Committee, and Greenpeace".[85] Further, the author's argument for the rapid increase in total numbers of protesters (10,000) during the 1993 summer is that the Clayoquot Sound protests became an "education movement".[86] This is in accordance with Keck and Sikkink's advocacy framework but goes further by highlighting "philosophy and practices of learning, education, and activism" as drivers of change in the summer of 1993.[87]

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81   West, "Saturday Rally in Vancouver."

82   Ibid.

83   West, "Largest 'No Enbridge' Rally."

84   APTN National News, "Harper Government Approves Enbridge's Northern Gateway Pipeline Project."

85   Walter, "Adult Learning in New Social Movements," 259–260.

86   Ibid., 254.

87   Ibid., 260.

But what did cooperation and social interaction look like in the Vancouver rally? According to West, in order to mobilise protesters information was spread among Vancouverites:

> Outreach teams are spreading the word across Vancouver to encourage participation at the May 10 rally, including door knocking in several neighbourhoods. Local artists are holding a special art build to create props and banners for the rally; this event will take place between 10 a.m. and 6 p.m., Saturday May 3rd at SFU Harbour Centre.[88]

Organisations forming part of the Defend Our Climate network additionally posted the event on their webpages, like the Pipe Up Network, campaigning on Facebook with "Pipe Up Against Enbridge". West thereby highlights a classical *modus operandi* of a climate protection campaign, linking up with environmental organisations. A distinction can be drawn between the 'localness' of environmental issues and 'globally' acting climate protection networks. We understand this as a dissent, since highlighting the global dimension of the climate problem automatically detaches the discourse from First Nation's local land claims debates.

The social networks perspective can help to understand this challenge from an organisational point of view. Campaigners at the Sierra Club B.C. and at the Wilderness Committee describe the loose character of their environmental network and underscore the "growing diversity and numbers of people speaking out against pipelines and advocating for climate justice and solidarity with indigenous peoples".[89] This reminds us of our earlier discussion on non-hierarchical, or collaborative social networks. Recent research on collaboration posits that partners collaborating in non-hierarchical networks enhance their outcomes.[90]

Beatriz Andrés and Raul Roler define such network structures:

> Unlike hierarchical networks (HN), based on centralised approaches of decision-making in which one partner processes all the power, NHN [non-hierarchical networks] are characterised by the establishment of collaborative processes with decentralised decision making models

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88   West, "Largest 'No Enbridge' Rally."

89   Vernon, and Coste, "Why May 10 Is a Critical Day."

90   Andrés, Beatriz, and Raul Roler, "Research on Collaborative Processes in Non Hierarchical Manufacturing Networks," *IFIP Advances in Information and Communication Technology* 423.1 (2014): 22.

(DDM). The establishment of collaborative DDM in NHN implies that all
the network partners are autonomous; all decisional independent units
are collaboratively involved in the management of the network processes
and integrated with different degrees of collaboration.[91]

Tindall's findings frame these weak ties in social networks as main drivers of
environmental mobilisation in BC. We are rather sceptical about these results
and understand this network structure as a challenge that complicated the or-
ganisation of anti-Enbridge protests in the Vancouver area. As is typical for
non-hierarchical networks, Defend Our Climate acts like a non-hierarchical
network, enabling participation. But even though the Defend Our Climate net-
work recruits locally (to comply with its bottom-up philosophy stated above),
we did not find much NGO documentation about concrete collaboration with
First Nations in this regard, apart from verbal affirmation and media coverage
of First Nations community speakers.

Therefore, it could be argued that the anti-Enbridge campaign failed to in-
clude a local First Nations perspective. We see proof for that by looking at the
time sequence of the protest process during the year 2014. Steward under-
stands the pipeline protest as an indigenous project: "The opposition to the
Gateway pipeline has been led by BC First Nations, who have been joined by
other First Nations."[92] Nevertheless, BC First Nations autonomously started
protesting officially in March 2013, *before* the Defend Our Climate rallies. Also,
the Union of BC Indian Chiefs came up with its public position on the North-
ern Gateway after Harper's decision and *after* May 2014, instead of officially
leading the discourse on November 2013 and May 10th 2014 in the metropolitan
area of Vancouver. Thus, the converse can be equally argued: First Nations pro-
tests paved the way for the more recent NGO-organised protests against En-
bridge. While the protests against Enbridge seemingly failed since they were
unable to prevent the approval of the project (as opposed to anti-logging pro-
tests in Clayoquot which achieved their desired outcome), it is important to
keep in mind the transformational effects on those who participate in such
collective events.

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91   Andres, and Roler, "Research on Collaborative Processes," 21.

92   Steward, Keith, "Harper's Shell Game, Why Tar Sands Pipelines Are not in Canada's
      National Interest," published by Greenpeace, 2012, accessed January 5, 2015. http://www.
      greenpeace.org/canada/Global/canada/report/2012/07/GP-ShellReport-WEB.pdf.

Finally, we would like to draw attention to possible factors explaining the limited outcomes of the Vancouver protest.[93] As demonstrated in our protest examples, while environmental NGOs have allied with First Nation groups, the latter are tied to deeper political processes of territorial rights and the other to much narrower understandings of environmental stewardship. Medovoi has recognised the fairly depoliticised nature of traditional environmentalism, as "compensatory substitute(s) for some more profound radical critique and in lieu of the impulse to a deeper political transformation".[94] Simpson has equally noted the depoliticisation of indigenous knowledge by both academics and environmentalists.[95] Lee and Willow have highlighted how relationships between First Nation groups and environmental NGOs can reproduce the status quo, minimising the political, economic, social, or ceremonial contexts of indigenous relationships to the land.[96] One possible explanation for not achieving the goal to stop Enbridge is what could be called 'mainstreaming of social movement goals', which turned the "movement"[97] into a 'universal toothless tiger', unable to gain traction with the 'localness' of First Nations resistance and healing. Equally critical, Boon et al. argue about niche development enhancing social transitions.[98]

Another alternative explanation for the failure of protests against Enbridge could be the campaigns' narrow communication strategy. West frames the protests as a political manoeuvre against Canada's Prime Minister Stephen Harper and seeks Premier Christy Clark's (British Columbia New Democratic Party, BC NDP) opposition to the federal government's approval.[99] However, from an NGO perspective it seems that the major task of the anti-pipeline movement is

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93   While the Enbridge protests failed to stop the approval of the project, they were followed by another wave of rallies at Burnaby Mountain (near Vancouver) in November 2014 against the expansion of the Kinder Morgan pipeline (another megaproject), which led to Kinder Morgan's evacuation from its drilling site. In other words, it can be argued that each subsequent protest or rally in Vancouver, regardless of outcome, coalesced into the next, transferring learnings and insights across participants.

94   Medovoi, Leerom, "A Contribution to the Critique of Political Ecology: Sustainability as Disavowal," *New Formations* 69.1 (2010): 132.

95   Simpson, Leanne, "Anti-colonial Strategies for the Recovery and Maintenance of Indigenous Knowledge," *The American Indian Quarterly* 28.3–4 (2004): 373–384.

96   Lee, Damien, "Windigo Faces: Environmental Non-Governmental Organizations Serving Canadian Colonialism," *The Canadian Journal of Native Studies* 31.2 (2011): 133–153.

97   West, "Saturday Rally in Vancouver."

98   Boon, Wouter P.C., Ellen H.M. Moors, and Albvert J. Meijer, "Exploring Dynamics and Strategies of Niche Protection," *Research Policy* 43.4 (2014): 794.

99   West, "Saturday Rally in Vancouver."

the political mobilisation of the BC NDP against Harper's Conservative Party of Canada (CPC) by advocating among local NDP politicians in British Columbia.

It is also useful to understand the role of the Canadian state in limiting the outcomes of these protests. Whereas Blake, Guppy, and Urmetzer refer to Clayoquot in summer 1993 as an incident with "militant" characteristics provoking state force,[100] Walter's[101] as well as Rossiter and Wood's[102] research refers to the state as a repressive force during protests: "The consequences of protest and arrest for many such mothers, grandmothers, and others were debilitating court trials, stiff fines, and later jail sentences."[103] These sequences draw a rather conflicting if peaceful picture of the 1993 event.

We emphasise in this chapter that environmental protection, for indigenous groups, is ultimately tied to the political objective of resurgence, decolonisation, and healing. Environmental stewardship is not an end in itself but a byproduct of place-based living and reconnecting to the land. According to indigenous sensibility, opposition to Enbridge is therefore deeply embedded in their struggle to reclaim their lost territories and preserve what they have remaining for the continuity of their communities, ways of living and knowledge systems. Opposition to the pipeline is therefore a deeply political project. In addition to the practice of decolonisation by reclaiming lost territories, re-attachment to the land also constitutes healing. According to Maidu author, Michelle LeBeau, "healing is a return home; a connection with relatives and ancestors in place".[104]

5   Conclusion

North American environmentalism has rarely been seen as a real success story: "Many leading environmentalists [...] have acknowledged that the movement

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100   Blake, Guppy, and Urmetzer, "Canadian Public Opinion," 455.

101   Walter, "Adult Learning in New Social Movements," 257.

102   Rossiter, David, and Wood, Patricia K., "Fantastic Topographies: Neo-liberal Responses to Aboriginal Land Claims in BC," *The Canadian Geographer*, 364: "The Provincial Government's dealings with First Nations may now appear less aggressive than the referendum questions and the political posturing over that process, but their continued interest in attracting investment necessitates remaining within the logic of neo-liberalism."

103   Walter, "Adult Learning in New Social Movements," 257.

104   LeBeau, Michelle, "A Healing Process," *Frontiers: A Journal of Women's Studies* 23.2 (2002): 7–8.

has largely failed in its goal of protecting the quality of the environment."[105] Schellenberger and Nordhaus even herald "the death of environmentalism,[106] since environmentalist groups and their policies have largely "failed".[107] Therefore, the authors claim: "if environmentalists hope to become more than a special interest we must start framing our proposals around core American values. We must start seeing our own values as central to what motivates and guides our politics." This is representative for the community turn in North America's environmentalism[108] and expresses the need for citizens' environmental articulation as basic democratic means. Building on these findings, we suggest that environmentalism needs to be further historically and locally contextualised, focusing on historical as well as present day local needs. The Enbridge protests we describe in this chapter did not adequately incorporate these features.

The various protests in Vancouver showcased a consolidation of the vocabularies used by First Nation groups to articulate their opposition to the pipeline project—which in our opinion failed to turn into a social movement. Instead, we conceptualise the recent protests as selectively mobilised organisations, failing to collaborate for one peak event like the Clayoquot summer 1993. We suggest further ethnographic and sociological research to illuminate those characteristics of cooperation that can strengthen the development of holistic environmental movements.

Settler colonial ambitions are ultimately tied to the control of land, its appropriation and use. Environmental groups typically restrict or circumscribe the use of land and its resources via specific technologies such as those of

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105   Dunlap, Riley E., and Angela G. Mertig, "The Evolution of the U.S. Environmental Movement from 1970 to 1990: An Overview," in *American Environmentalism, The U.S. Environmental Movement, 1970–1990,* ed. Riley E. Dunlap and Angela Mertig, 1–9 (New York: Routledge, 1992), 8.

106   Schellenberger, Michael, and Ted Nordhaus, "The Death of Environmentalism, Global Warming Politics in a Post-Environmental World," published 2003, accessed January 6, 2015, 7. http://www.thebreakthrough.org/images/Death_of_Environmentalism.pdf: "The environmental community's narrow definition of its self-interest leads to a kind of policy literalism that undermines its power. When you look at the long string of global warming defeats under Presidents Bill Clinton and George W. Bush, it is hard not to conclude that the environmental movement's approach to problems and policies hasn't worked particularly well. And yet there is nothing about the behavior of environmental groups, and nothing in our interviews with environmental leaders, that indicates that we as a community are ready to think differently about our work."

107   Ibid., 33.

108   Rootes argues similarly about European environmentalist movements: Rootes, Christopher, "Conclusion: Environmental Protest Transformed?," in *Environmental Protest in Western Europe*, 234–257 (New York: Oxford University Press, 2003), 4.

bio-diversity conservation and protected areas. There have been many instances when indigenous communities have been denied access to their own lands and resources, which they had been living in for generations in the name of such seemingly altruistic technologies. Indigenous resistance to the Enbridge pipeline is therefore an extension of ongoing resurgence against the Canadian state, to decolonise and heal. Based on the experiences of dispossession by former and current iterations of colonialism in BC, the Enbridge pipeline is understood as an extension of colonial anxieties and ambitions. The megaproject directly puts indigenous place-based lifestyles at risk threatening their sense of identity, culture and rootedness. It remains to be seen whether cooperation between First Nations and environmental organisations may lead to a new and fruitful Clayoquot.

PART 4

Prospects

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CHAPTER 11

Incorporating Climate Change Remedies into Community Development in Greenland

Naotaka Hayashi

Abstract

In order to promote national economic development projects in the course of climate change, it is important to understand how locals have been coping with climate change and building a community in accordance with an ecological and cultural historical context of locality. Employing Japanese sociologist Kazuko Tsurumi's Endogenous Development Theory, this chapter shows that southern Greenland's community created a tradition of sheep farming by incorporating external knowledge, technology, and institutions. The development of sheep farming is a good example of adaptation to climate change at the local level with government support. Today, in order to establish a self-sufficient economy Greenland is seeking to develop an energy industry in the course of climate change. Greenlanders' livelihood and industry include traditional hunting, fishery, sheep farming, and the energy industry. It would not be sound to make a development plan for each industry and livelihood separately. This chapter argues that a government development plan should not nullify local efforts to cope with climate change and to build a resilient community. It is necessary to make an integrated resource management plan and to have climate change remedies within it, so that development projects and adaptation to climate change will work in concert.

1   Introduction

Between 2008 and 2009, I conducted ethnographic fieldwork in western Greenland, based in the town of Qaqortoq, South Greenland, for 13 months as part of my PhD research. The purpose of my fieldwork was to investigate how locals were trying to build viable livelihoods and industries in the course of climate change. Greenland is well known as a land of hunting people—Inuit-descendent Greenlanders (Gl. pl., *kalaallit*, hereafter Greenlanders). Yet, in the southern parts of the country one can find people who live by sheep farming.

Southern Greenland is an interesting place to study. The media often report that while climate change may bring only negative effects to the life of resi-

dents in the circumpolar North, for example, Nunavut and northern Green-
land, opportunities may arise in southern Greenland as the climate becomes
warmer. According to the media, a warming climate may bring about prefera-
ble effects to plantations and potato farming in southern Greenland.[1] There
may be a chance that hay farming will become easier. There are hopes that the
cod fishery that collapsed in the 1970s may be revitalised if warming water
brings cod back to the Greenlandic waters (see below).

During my fieldwork, I focused on sheep farming in order to research the
impact of climate change on it. I stayed with farmers, interviewed them and
helped them farm, rounding up sheep from morning till evening. When I asked
about climate change, in most cases, farmers replied that climate would always
change and that 'climate change' that the rest of the world were talking about
(i.e., in the media) was nothing new to them although changing climate condi-
tions actually had an impact on their farming.

In contrast to the farmers' view that the changeable climate was a norm in
Greenland, the Greenland government tended to emphasise 'change' in cli-
mate and its impact, bad and good, on its livelihood and industries. For exam-
ple, today's Greenland has a variety of livelihoods and industries, including
traditional subsistence hunting and fishing, a century-long commercial fisher-
ies, mineral mining, tourism, and the emerging petroleum industry. While ad-
dressing concerns about the negative impact of climate change on hunting,
the Greenland government often makes positive statements in the media
about possibilities that some industries such as oil and gas may benefit from a
warming climate.[2]

It seems that there is a gap between locals' perspectives and government
attitudes towards climate change. Global warming is continuing to threaten
social viability of Arctic communities.[3] Scientific studies show that the Green-
land Ice Sheet covering approximately 80 percent of its landmass has been
melting at a faster pace than expected with a possibility of causing sea level

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1   Lyall, Sarah, "Climate Change Greens Up Greenland: Farmers Experiment with Vegetable
    Crops," *Edmonton Journal*, October 28, 2007, A9.

2   Kleemann, Louise M., "Kuupik: Silaannaap pissusiata allanngoriartornera iluaqutigisinnaa-
    varput [Kuupik: We Will Take Advantage of Climate Change]," *Kalaallit Nunaata Radioa* (*KNR*)
    [*Greenlandic Broadcasting Corporation*], September 17, 2010, accessed September 17, 2010.
    http://www.knr.gl/kl/news/kuupik-silaannaap-pissusiata-allanngoriartornera-iluaqutigisin
    naavarput.

3   Anisimov, O.A. et al., "Polar Regions (Arctic and Antarctic)," in *Climate Change 2007: Impacts,
    Adaptation and Vulnerability: Contribution of Working Group II to the Fourth Assessment Report
    of the Intergovernmental Panel on Climate Change*, ed. Martin L. Parry et al. (Cambridge:
    Cambridge University Press, 2007), 675–676.

rise of 18 to 59 centimetres by 2090.[4] The Greenland (autonomous) government is relatively young in terms that it started in 1979, and the autonomous government has been promoting development projects rapidly. In order to promote development projects in the course of climate change, it is important to understand how locals have been coping with climate change in harmony with the ecological, cultural historical context of locality.

In this chapter, I analyse the historical adaptive process to climate change in sheep farming. In this analysis, I focus on community development since, as I shall show, an adaptive process entails the development of community. At the end of the chapter, I discuss the importance of planning resource management from a wider point of view, including climate change remedies and community development.

2　Endogenous Development Theory

The 2000s have seen the study of climate change rapidly burgeoning. As far as the Arctic and Sub-Arctic region is concerned, research at an early stage revealed that through direct observations Arctic residents, usually aboriginal peoples, had already witnessed environmental change caused by anomalistic climatic variations.[5] Their observation of environmental change was based on the close engagement with their environment on an everyday basis through livelihood (for example, hunting), and their environmental knowledge encompasses a broad range such as climate, wildlife behaviour, and plants.[6] Gradually research focused on the local-level coping and adaptive processes to climate change. Research on this mostly deals with the medium and short term

4　Meehl, G.A. et al., "Global Climate Projections," in *Climate Change 2007: The Physical Science Basis: Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. S. Solomon et. al. (Cambridge: Cambridge University Press, 2007), 750.

5　Krupnik, Igor, and Dyanna Jolly, ed., *The Earth is Faster Now: Indigenous Observations of Arctic Environmental Change* (Fairbanks, Alaska: Arctic Research Consortium of the United States, 2002); Nichols, Theresa et al., "Climate Change and Sea Ice: Local Observations from the Canadian Western Arctic," *Arctic* 57.1 (2004); Huntington, Henry P. et al., "An Introduction to the Arctic Climate Impact Assessment," in *Arctic Climate Impact Assessment*, ed. Carolyn Symon Lelani Arris, and Bill Heal (Cambridge: Cambridge University Press, 2005).

6　Huntington, Henry et al., "Matching Traditional and Scientific Observations to Detect Environmental Change: A Discussion on Arctic Terrestrial Ecosystems," *Ambio Special Report* 13 (2004).

adaptive processes.[7] If any, little research has investigated the long-term adaptive process from a local point of view.[8] The local adaptation process that I present in this chapter spans a hundred years. In the review of the history of sheep farming in Greenland, I intend to show local efforts and initiatives to create a tradition of viable livelihood—sheep farming.

The development of sheep farming in Greenland involves the Inuit population under colonial authority trying to establish their own tradition, even though they utilise technology and an economic system brought in by their colonial rulers. In order to analyse the development of sheep farming in Greenland, I adopt Japanese sociologist Kazuko Tsurumi's Endogenous Development Theory. The reason why I do so is that Tsurumi's theory explains: firstly, that the incorporation of external knowledge, technology, and institutions may contribute to the endogenous development of tradition for a community; secondly, that creating tradition entails self-reliant individuals' endeavour to create a condition where they can pursue their own possibilities; and thirdly, that key persons play an important role in transforming a community.

The following is an explanation about Tsurumi's perspective towards endogenous development. Influenced by the system theory of Talcott Parsons and the study on social change by Max Weber, Tsurumi propounded the Endogenous Development Theory in the 1970s. She defines endogenous development as the creation of conditions in which people of a locality can freely seek to realise their own possibilities.[9] In theory, locals endeavour to create a community where they can realise alternative ways of life. The form of the community they want to create and the manner by which they create the community will depend upon environmental conditions, cultural heritages, and historical conditions. Therefore, this creation varies from place to place. Even though knowledge, technologies and systems are brought in from the

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7   Ford, James D., Barry Smit, and Johanna Wandel, "Vulnerability to Climate Change in the Arctic: A Case Study from Arctic Bay, Canada," *Global Environmental Change* 16.2 (2006).

8   Hamilton, Lawrence C., Per Lyster, and Oddmund Otterstad, "Social Change, Ecology and Climate in 20th-Century Greenland," *Climatic Change* 47 (2000); Hamilton, Lawrence C., Benjamin C. Brown, and Rasmus Ole Rasmussen, "West Greenland's Cod-to-Shrimp Transition: Local Dimensions of Climatic Change," *Arctic* 56.3 (2003).

9   Tsurumi Kazuko 鶴見和子, "Naihatsuteki hattenron no keifu 内発的発展の系譜 [*A Genealogy of the Endogenous Development Theory*]," in *Naihatsuteki hattenron* 内発的発展論 [*Endogenous Development Theory*], ed. Tsurumi Kazuko 鶴見和子, and Kawata Tadashi 川田侃 (Tokyo: Tōkyō daigaku shuppankai, 1989), 43–64; Tsurumi Kazuko 鶴見和子, *Naihatsuteki hattenron no tenkai* 内発的発展論の展開 [*The Application of the Endogenous Development Theory*] (Tokyo: Chikuma shobō, 1996), 9.

outside, as long as locals make use of them in harmony with local conditions, the process can be regarded as an autonomous, endogenous development.

Why does Tsurumi relate endogenous development to the creation of tradition? If the quintessence of tradition is knowledge, customs, institutions, and their form that has been passed on from one generation to the next, then social transformation that locals carry out is a reformation of tradition, creating a new tradition based on existing traditions or grafting a new tradition into existing traditions, and a new tradition eventually takes root in the community. In this regards, endogenous development is a creation of tradition.[10]

Who or what leads a path to social transformation? According to Tsurumi, social changes are mainly triggered by a 'key person' or persons. The idea of 'key person' is originally Japanese philosopher Saburo Ichii's concept in a treatise on historic social change.[11] He argues that social change often requires a key person or persons who have a willingness to endure the suffering that would result from a creative, but arduous undertaking. They choose to take the initiative and lead to a better way of life in order to reduce 'irrational burdens'. Irrational burdens are those for which a group of individuals is not responsible, but which keep pestering them owing to the regime and the social system that they have taken for granted during a certain period. For example, since slavery existed in the US during the 18th century, black people suffered from it regardless of their act and ideas. Key persons can envision a condition in which locals can explore future possibilities without unjustifiably suffering, and the condition that they endeavour to create is an alternative society that would not likely come about otherwise. Relative to Ichii's key persons, Tsurumi's key persons' workload is somewhat reduced. Her key persons neither subvert government nor the social regime. Rather, they are agents of gradual change in everyday life in a local community, and they are not necessarily revolutionists.[12] Following her theory, I use the concept of key person in my analysis of sheep farming in southern Greenland. As I shall discuss below, the introduction of

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10   Tsurumi's Endogenous Development Theory is an antithesis to development theories formulated in the 1960s American sociology circle. According to them, developed Western countries, such as the United States and the United Kingdom, developed endogenously, while non-Western countries developed exogenously, borrowing forms and types of development from Western developed countries. Tsurumi argues for autonomy and self-reliance of developing countries.

11   Ichii Saburo 市井三郎, "Seijigaku ni okeru gūzensei no gainen 政治学における偶然性の概念 [A Concept of Contingency in Political Science]," in *Gūzen to hitsuzen* 偶然と必然 [Contingency and Inevitability], ed. Kei Takeuchi 竹内啓 (Tokyo: Tōkyō daigaku shuppankai, 1982), 267.

12   Tsurumi, *Naihatsuteki hattenron no tenkai*, 215.

sheep farming did not follow a grandiose plan (for example, breakaway from Danish colonialism), but was rather an 'experiment' in a Danish effort to improve the Greenlanders' standard of living. Therefore, my key persons are promoters of an experiment within the local conditions.

3   Sheep Farming Representing South Greenland Culture

Although Greenland is the world's largest island (2.1 million square kilometres), a massive ice sheet covering the majority of the land limits habitable space to the coastal area. The entire population, in 2009, was only 56,194, with Inuit-descendent Greenlanders accounting for approximately 90 percent and Danes being the major group of foreigners.[13] Accordingly, human habitations are sparsely dotted along the coastlines, making the population density as low as 0.14 per square kilometre. As is the case throughout Greenland, there are no roads connecting one place to another. Boats are the only means of transportation.

In Greenland, human habitations are administratively divided into towns (Dan. *byer*) and settlements (Dan. *bygder*). More than 80 percent of the population live in 17 towns and the other 20 percent is distributed in 65 small settlements. Among these are settlements with a population of fewer than 50. On the other hand, the capital of Greenland, Nuuk has a population of 16,454 while the population of the second largest town, Sisimiut, is 5,497. Table 1 shows how disproportionally Greenland is populated and how the population of Nuuk stands out among habitations.

South Greenland, as an administrative district, consists of three towns and 13 inhabited settlements. The administrative centre of South Greenland is the town of Qaqortoq, the fourth largest town, with 3,305 inhabitants. Many townsmen are engaged in administration, education, and commercial business. During my fieldwork period in 2008–2009, the Agricultural Advisory Office was located in this town. During summer, a chief and an advisor, together with a surveyor, visit sheep farms by boat, providing consulting services and surveying fields and housing, which is necessary for applying for subsidies from the government.

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13   Grønlands Statistik, "Stat Bank," published by Kalaallit Nunaanni Naatsorsueqqissaartarfik [Statistics Greenland], accessed August 11, 2013. http://bank.stat.gl/dialog/statfile.asp?Lang=4; all the statistical data are from 2009 when I conducted my fieldwork in Western Greenland.

TABLE 11.1   *Population distribution by habitation type in Greenland in 2011*[14]

Habitation		Population	(%)
Town			
	Nuuk	15,105	
	Sisimiut	5,497	
	Ilulissat	4,528	
	Qaqortoq	3,305	
	Aasiaat	2,947	
Towns (total)		47,026	(83.7)
Settlement		8,611	(15.3)
Station		295	(0.5)
Sheep farm		183	(0.3)
Other		79	(0.1)
Total		56,194	(100.0)

Sheep farming requires a vast spread of land, and this necessitates sheep farmers to move away from town to very isolated areas. While the coastal region is cooler, the inner parts of the fjords are warm enough to sustain a large area of grassland in the hills and mountains. Accordingly, while hunters and fishers live in towns and settlements in the coastal regions, sheep farms dot the shorelines of the inner fjords.

Life in a settlement is different from town life. Most settlement populations base their livelihoods on hunting and fishing. Among them, Qassiarsuk (population 47) and Igaliku (population 29) are the only settlements whose economic base relies primarily on sheep farming (note the entry of "sheep farm" in table 11.1). This entry represents sheep farmers who settled in isolated places, by clearing the land by themselves. Therefore, statistically speaking, the sheep farmers I refer to in this chapter are 259 (47+29+183) family members, representing only 0.5 percent of the entire population. In 2009, about 50 sheep farms were active, sending approximately 22,000 lambs and sheep to a slaughterhouse in Qaqortoq. Sheep farming does not make as large a commercial

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14   Cf. Grønlands Statistik, "Stat Bank." The table shows the top five towns' populations. Note that a majority of the Greenland population is concentrated in towns, as opposed to settlements.

contribution to Greenland's economy as fisheries, which are today's main industry of Greenland.

In terms of the number of households and their economic impact, readers may have an impression that sheep farming is not a representative group livelihood. Yet, sheep farming is part of Greenlandic tradition, and holds a cultural significance. For example, Greenlanders now consider lamb as a traditional food alongside seal and whale meat. This situation is very different from Alaska and Nunavut where animal husbandry did not take root. In Nunavut, animal husbandry did not establish because eating domesticated animals was associated with eating "pets"[15]. Therefore, the study of sheep farming provides insights into community development in Greenland.

4   History of Sheep Farming in Southern Greenland

The following review of the history of sheep farming may be lengthy, but it is necessary for illustrating how sheep farming has become part of Greenlandic tradition, a task I will accomplish by applying Tsurumi's endogenous development theory.

4.1   *The Incipient Stage of Sheep Farming*

(Re)introducing sheep farming to Greenland was originally a Danish idea. Through Norse ruins scattered throughout southern Greenland, it was well known that a farming society existed in the past, based on animal husbandry. Norse farmers (Vikings) kept cattle, sheep, and goats between the 10th and the 15th century. According to Danish historian Sørensen, the introduction of sheep farming to Greenland was triggered by a historic regime shift in Denmark at the beginning of the 20th century.[16] In 1901, the liberal left party took power, replacing the conservative government that had been in power since 1865. The wave of social reform reached colonial Greenland. At that time, the Administration of Greenland (Dan. *Grønlands styrelse*), located in Denmark, had jurisdiction over civil administration, trade, church, and education in Greenland. Yet, it was the Royal Greenland Trade (Dan. *Den Kongelige Grønlandske Handel*, henceforth KGH) that had virtual control over Greenland's society and economy. Leftists and liberal reformists in Denmark and missionaries in Greenland opposed KGH to be deeply involved in Greenland's politics and

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15   Dr. Christopher Fletcher, per. comm. 2007.

16   Sørensen, Axel Kjær, "Denmark-Greenland in the Twentieth Century," *Meddelelser Om Grønland* [Report on Greenland] (*Man & Society*) 34 (2007): 22–23.

fiercely criticised KGH's monopolistic administration. They urged KGH to raise the Greenlanders' standard of living.

As cheaper petroleum oil became easier to obtain, markets for blubber, seal and whale oil in Europe and North America shrunk in the latter part of the 19th century. However, even at the turn into the 20th century, blubber, seal and whale oil were still the main items that KGH bought from the Greenlanders. KGH's purchase of these items was a virtual subsidy that sustained seal hunting in Greenland (this is the case still today). However, the protection of seal hunting and whaling was not enough to lift Greenlanders' living standards. In order to boost Greenland's economy, KGH decided to introduce commercial fisheries as an alternative to seal hunting. The population of Atlantic cod (*Gadus morhua*) off western Greenland was trending up since the second half of the 19th century. Bumper harvests coincided with occurrences of warm spells of surface water. This increase caught Danish attention. Historical records show that there is a tendency that as the surface water warms, spawning areas expand, creating an upward trend in the cod stock off western Greenland.[17] The surface water was remarkably warm in the 1930s, and it continued until the 1960s. Accordingly, cod fishery flourished in the 1930s and a good catch of cod continued until the middle of the 1960s.[18] At the same time, seals moved away from the waters of Greenland in search of preferred cooler temperatures.

In addition to commercial fisheries, the board of KGH began considering the possibilities of keeping domestic animals in Greenland. KGH appointed Pastor Jens Chemnitz (1853–1929) to test the feasibility of sheep farming in southern Greenland.[19] Chemnitz was born at a now-abandoned settlement near the southern tip of Greenland. His father was a German Settlement Manager and his mother was a Greenlander from Igaliku. He knew what Greenlanders' lives were like. In addition, he received his education in Denmark, where a climate of social change gained momentum, and was keen to improve the Greenlanders' lives. Starting in 1906, over a period of nine years Chemnitz kept sheep at a vicarage of Narsarmijit (then Frederiksdal) and thereby proved that it was possible to keep sheep in the climate of southern Greenland.

17   Rasmussen, Rasmus Ole, and Lawrence C. Hamilton, *The Development of Fisheries in Greenland: With Focus on Paamiut/Frederikshåb and Sisimiut/Holsteinsborg* (Roskilde, Denmark: Institute of Geography and Development Studies, 2001), 14–16, 26.

18   Hamilton, Lyster, and Otterstad, "Social Change," 98–99; today's main catch is shrimp (*Pandalus borealis*) and Greenland halibut (*Reinhardtius hippoglossoides*).

19   Petersen, H.C., *Grønlændernes Historie Før 1925* [Greenlanders' History Before 1925] (Nuuk: Namminersornerullutik oqartussat/Atuakkiorfik, 1991), 95–97.

Another key person at the initial stage was Icelandic-descended Lindemann C.R. Walsøe (1880–1936). He was serving in the Danish army, but as he learned about the project to introduce sheep farming to Greenland, he volunteered to take on a role of its promoter. Right after arriving in Qaqortoq (Julianehåb at that time) in 1913, he travelled throughout southern Greenland by boat and on foot, looking for suitable areas for sheep farming.[20]

During his on-site survey, Walsøe met Chemnitz at Narsarmijit. He also visited Igaliku where he saw Greenlanders keeping about a dozen cattle.[21] Igaliku is the oldest 'Inuit' sheep farming settlement in Greenland. KGH was established in 1774 after the demise of infant trading companies. The town of Qaqortoq was established as KGH's colony (Dan. *Koloni*, a trading centre of each district) in 1775, and Norway-born merchant Anders Olsen (1718–1786) was entrusted with the establishment of colonies in southern Greenland. Igaliku was where Olsen lived with his Greenlandic wife and children after his retirement. He practised animal husbandry, keeping cattle and presumably sheep.[22] Up until 1935, the only inhabitants of Igaliku were Olsen's descendants.[23] Although they intermittently stopped keeping sheep, Igaliku inhabitants kept cattle. Therefore, Greenlanders in Igaliku were imbued with a European custom of animal husbandry in addition to Greenlandic subsistence such as seal hunting and cod fishing.

In response to Walsøe's recommendations, the Danish authority established a Sheep Breeding Station with a large ranch at the middle of the town of Qaqortoq in 1915 (however, its operation actually did not begin until 1917 due to World War I). Walsøe became the director of the Station and encouraged local Greenlanders to keep sheep. The 245 sheep that Walsøe and Chemnitz brought from mainly Iceland were the origin of today's 22,000 sheep. Like Chemnitz, he loaned sheep to interested parties on the condition that they would return the same number of lambs they rented. He also devoted himself to training interested youngsters in sheep farming. Abel Kristiansen's memoirs reveal how enthusiastic Walsøe was and how much local people including his apprentices

20   Kristiansen, Abel, *Savaateqarneq Eqqartulaarlugu: Strejflys Over Faareavlen* [Little Memories of Sheep Farming] (Nuuk: Nammineq naqitertitaq [Eget Forlag], 1998), 28–29.

21   Ibid, 33–34.

22   Bak, Ove, "Træk Af NarssK Kommunes Historie [An Outline of Narsaq Commune's History]," in *Narssak': Igaliko, K'Agssiarssuk, Narssarssuak'* [Narsaq, Igaliku, Qassiarsuk, and Narsarsuaq], ed. Jørgen Fisker, and Nordiske Landes Bogforlag (Gylling, Denmark: Narayana Press, 1981), 50–55.

23   Bak, Ove and Museumsudvalget i Narssaq, *Igaliko: Fra Bispesæde Til Fåreholderbygd* [Igaliku: From Episcopal Residence to Sheep Farming Settlement] (Bagsværd, Denmark: Stenby Trk, 1983), 20.
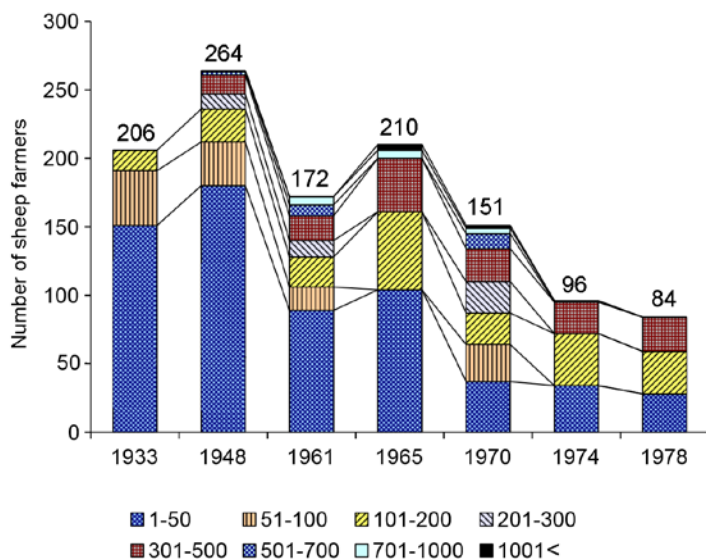
FIGURE 11.1   *Flock size of sheep and number of sheep owners*[24]

admired him.[25] It is through his offices that sheep farming became popular among southern Greenlanders.

4.2   *Greenlandic Successors of Sheep Farming*

When sheep farming was initially introduced to Greenland, both the Danish authorities and local Greenlanders thought it to be a sideline. Locals kept a small enough number of sheep that they could maintain their primary livelihood—hunting and fishing. A majority of sheep owners kept only a dozen or so, and most flock sizes did not exceed fifty. Figure 11.1 shows that the majority of people were engaged in sheep farming on a small-scale, part-time basis. If a flock size exceeded a hundred, the individual had to sheep farm full-time.

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24   The figure shows the sheep ownership pattern between 1933 and 1978. Data in figure 11.1 based on Berg, Hans, *Sheep Raising in South Greenland: An Economic Development Program* (Copenhagen: Institute of Eskimology, University of Copenhagen, 1972), 3–4; Christiansen, Hans C., "Erhvervsudviklingen i Narssak'-Området [The Industiral Development in Narsaq]," in *Narssak': Igaliko, K'agssiarssuk, Narssarssuak'* [Narsaq, Igaliku, Qassiarsuk, Narsarsuaq], ed. Jørgen Fisker and Nordiske Landes Bogforlag (Gylling, Denmark: Narayana Press, 1981), 151–152; and Kristiansen, Abel, *Savaateqarneq Eqqartulaarlugu: Strejflys Over Faareavlen* [Little Memories of Sheep Farming] (Nuuk: Nammineq naqitertitaq [Self Publishing], 1998), 68–70.

25   Kristiansen, *Savaateqarneq*, 86–91.

Full-time farming meant moving to a place far from town, cultivating land, building barns and housing, and making hay fields.

European-descended Greenlander Ottooraq Frederiksen was a key person in that he inaugurated a tradition of the professional sheep farming in Greenland. In 1924, taking his family and 145 sheep with him, he settled in Qassiarsuk which is located at the back of Tunulliarfik fjord. His attempt was successful, and after three years he was able to return the same number of lambs he had borrowed from the station. Ottooraq's children and extended families also became sheep farmers and opened up sheep farms at Qassiarsuk. In 1935, Qassiarsuk was home to eleven sheep farmers with 1,198 sheep, and the population grew to 125.[26] When the nearby land was fully occupied, sheep farmers settled in adjacent areas, along both shorelines of Tunulliarfik fjord. Today, this area is the centre of sheep farming in Greenland and almost all the sheep farmers dwelling there are descendants of Ottooraq. Lagging behind Qassiarsuk, some full-time sheep farmers appeared in Igaliku, and as Igaliku ran out of land in the 1930s, sheep farmers settled other places down to near the town of Nanortalik.[27]

Noteworthy was that sheep farmers in various areas created sheep farmers' associations to establish a system of mutual help with which to arrange collective round-up, to address farmer's issues and to solve problems concerning farming chores. Ultimately, sheep farmers' associations in various areas were united into the Federation of Sheep Farmers' Associations (Gl. *Savaatillit Peqatigiit Suleqatigiissut*, henceforth SPS).

4.3   *Suffering from Severe Winters*

By 1930, the number of sheep in southern Greenland exceeded 5,000 and further rose to approximately 10,000 in 1936. In 1948, the number of ewes reached 22,000 and 12,000 lambs were processed for meat in the same year.[28] During the 1950s, a fifth of the population of southern Greenland, or 1,000 people, belonged to households engaged in sheep farming.[29] These numbers show that sheep farming took root in southern Greenland by the 1950s, as an important economic activity of households. However, Greenland sheep farming would face grave issues from this period.

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26   Bak, "Træk," 86, 88–89.

27   Ibid, 90–95.

28   Kristiansen, *Savaateqarneq*, 66–67; 80–81.

29   Christensen, K.N., "Et 50 Års Jubilæum [The 50 Years Anniversary]," *Tidsskriftet Grønland* [Journal Greenland] 2 (1957): 78.
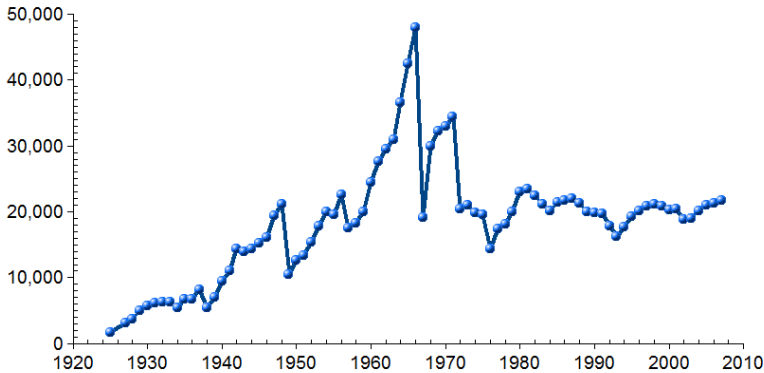
FIGURE 11.2   *Number of sheep slaughtered* [30]

The number of sheep processed at a slaughterhouse has been recorded every year since 1925. Looking at the record of the number of sheep slaughtered, several years show a sharp drop (figure 11.2). The drops in production were derived from sheep dying outdoors as a result of severe climate conditions. Until the 1970s, many sheep farmers let their animals graze loose on the hills and mountains. One of the characteristics of climate in southern Greenland is a sudden change in wind direction. Among others, high winds blowing down from the interior ice sheet to the coastal area cause a wide range of temperature fluctuation, with being a decisive factor for the survival of sheep during winter. These foehn winds, locally called *nigeq*, are very dry and warm, and push temperature from the minus side to the plus side of the thermometer in a short time, melting snow and ice. High winds are always followed by cooler weather, and the resulting ice cover on the grassland makes it difficult for sheep to forage for grasses. Many sheep starved to death after high winds in 1937–1938, 1948–1949, 1956–1957, 1966–1967, and 1975–1976. The winter of 1966–1967 was the worst winter in the history of sheep farming in Greenland. The number of sheep plummeted from 47,000 to 22,000.[31] As a result, many people quit sheep farming. By the middle of the 1960s, it became clear that extensive sheep farming was not a viable mode in Greenland's climate.

In order to avoid a loss of sheep, it was necessary to stable animals during winter and feed them. In so doing, it was necessary to build sheep sheds and to

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30   Data in table obtained from the Agricultural Advisory Office at Qaqortoq, Greenland.

31   Christiansen, Hans C., "Erhvervsudviklingen i Narssak'-Området [The Development of the Commerce in the Narsaq Area]," in *Narssak': Igaliko, K'agssiarssuk, Narssarssuak'* [Narsaq, Igaliku, Qassiarsuk, and Narsarsuaq], ed. Jørgen Fisker, and Nordiske Landes Bogforlag (Gylling, Denmark: Narayana Press, 1981), 148–149.

grow hay in summer. Consequently, promoting the establishment of fenced-in fields (Dan. *hjemme mark*) became the top priority of the authority.

The period between the 1950s and the 1960s coincided with the period that Denmark promoted two ten-year development projects (commonly called the G50 and G60 plan) in an effort to develop Greenland's industry—mainly fisheries. The Sheep Breeding Station was relocated in 1955 from Qaqortoq to Upernaviarsuk, another inlet of the same fjord. The new station was named the Upernaviarsuk Research Station (hereafter Upernaviarsuk) and its mandate included not only the promotion of sheep farming but also agricultural and silvicultural experiments, and more systematic training of young sheep farmers. The Station purchased two tractors and other agricultural equipment to use throughout the sheep farming district of southern Greenland to till the ground.[32] As a result, tilled fields expanded from a total of 40 hectares in 1963 to 100 hectares in 1970.[33]

4.4   *From Extensive to Intensive Sheep Farming*

After its operation halted twice in the first half of the 1970s due to financial difficulties, Upernaviarsuk was revived and became independent from the Danish authority in 1976. This means that the development of sheep farming was transferred to Greenlanders' hands at this point. It was Kasper Dhal (name altered by the author for privacy reasons), together with the SPS, that was committed to the negotiations with Greenland Provincial Council (Dan. *Landsråd*) for the revival of Upernaviarsuk. Dhal was a Greenlandic key person in those days. His father was a sheep farmer who ran a farm on the shoreline of Tunulliarfik fjord, and he was educated at an agricultural school in Denmark. With this background, Dahl was motivated to reorganise Upernaviarsuk in order to modernise sheep farming in Greenland from the second half of the 1970s onwards.

Dhal and his fellow officers in the renewed Upernaviarsuk initiated a series of modernisation programs. The SPS also worked on the improvement of financial systems for sheep farming. It became possible for farmers to obtain subsidies from the government providing that they built sheep sheds on a self-building basis. In addition, loans were available for the purchase of fertiliser and concentrates (fodder supplements). As a result, farmers were able to build sheep sheds with a capacity of 300–500, and reproduction rates increased from

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32   Christensen, "Et 50 Års," 76; Christiansen, "Erhvervsudviklingen," 150–151.

33   Christiansen, "Erhvervsudviklingen," 150–151.

0.8 lambs per ewe in 1975 to 1.2 in 1979.[34] The mean flock size also increased from 170 sheep in 1978 to 280 sheep in 1982.

The Upernaviarsuk also developed a curriculum for the farming school to include ranching practicums in foreign countries such as Iceland and Norway for at least several months. Furthermore, between 1975 and 1981 Upernaviarsuk made vegetation maps covering arable lands in southern Greenland in co-operation with the Agricultural Research Institute in Reykjavik, Iceland.[35]

When Greenland achieved an autonomous government under the Act of Home Rule (commonly called the Home Rule government, Dan. *Grønlands Hjemmestyre*) in 1979, Greenland's Parliament enacted ordinances on sheep farming. The ordinances include articles on property, the allocation of sheep farms, and grazing rights on common grazing land, and, among others, winter foddering—the articles require farmers to confine their animals during winter and stipulate the size of fields, the amount of hay and fodder according to the flock size. With the investments required by the ordinances, small-scale sheep farming became no longer viable. The ordinances virtually enforced the intensified mode of sheep farming.

Although Upernaviarsuk became unable to receive funds from the European Economic Community (EEC, the forerunner of the European Union) since Greenland left it, the area of fields did increase through the efforts of individual farmers, from 235.4 hectares in 1982 to approximately 1,000 hectares in 2008. This increase was achieved mainly because the government began to provide subsidies for farmers to purchase agricultural equipment such as backhoes and tractors. In addition, the confinement of sheep during winter, the improvement of nutritious conditions, and the introduction of new breeding techniques all contributed to the increased productivity of ewes. The same amount of lambs as in the 1960s can now be produced with half the flock size. The meat production has become stabilised at the 20,000 sheep level since the 1980s. The number of sheep owners decreased from 95 in 1982 to 48 in 2008, and Greenlanders lost sheep farming as a sideline. Yet, sheep farming became a viable livelihood even under southern Greenland's harsh climate, and a small number of large-scale sheep farmers have formed a sheep farming tradition in southern Greenland.

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34   Egede, Kaj, "Fåreavlen 1975–1980 [Sheep farming]," in *Narssak': Igaliko, K'agssiarssuk, Narssarssuak'* [Narsaq: Igaliku, Qassiarsuk, and Narsarsuaq], ed. Jørgen Fisker, and Nordiske Landes Bogforlag (Gylling, Denmark: Narayana Press, 1981), 218–219.

35   Thorsteinsson, Ingvi, *Undersøgelser Af De Naturlige Græsgange i Syd-Grønland 1977–1981* [Investigation of the Natural Grassland in South Greenland] (Upernaviarsuk, Greenland: Landbrugets Forskningsinstitut Island; Forsøgsstationen Upernaviarsuk Grønland, 1983).

4.5   *Theoretical Review on Sheep Farming*

In theory, endogenous development is a process in which members of a community create a new tradition based on existing traditions. By community, Tsurumi means a certain place, and thus community equates with "locale".[36] Sheep farmers, appearing in my review, scatter along with the shorelines of the inner fjords of southern Greenland and do not cluster at a single place; however, from a broader viewpoint, we can view as a community a larger area of southern Greenland where people base their livelihood on sheep farming.

A community is a venue where inhabitants can share common values and visions for life and enjoy interactions with people migrating or sojourning from the outside. Among other things, I emphasise that endogenous development requires input from outside of the community. Knowledge, technologies, and systems that outsiders bring into the community may redefine community members' common values and visions. These external influences may inspire key persons to envision an alternative way of life that they would not have come up with otherwise, spurring them to engage in community transformation. As foreign as these factors are to the community, as long as locals incorporate them in harmony with the local ecological conditions, cultural heritages, and local historical contexts, social transformation can lead to endogenous development. What Tsurumi argues in her Endogenous Development Theory is different from the simplified idea that tradition builds on only internal cultural elements within a locality.

In the Greenland sheep farming case, external elements came from Denmark and other Nordic countries with the influence of Danish colonialism such as Iceland and Norway. In this respect, Greenlanders made use of the colonial regime to obtain a tool for exploring future possibilities and envisioning future prospects.

My review of the development of sheep farming in Greenland shows that not only locals but also outsiders play a key role in social transformation. Actually, Tsurumi emphasises the role of visitors and sojourners because they bring external elements into a community. It was Danes, especially the Administration of Greenland and KGH, that promoted sheep farming at the initial stage. Since Pastor Chemnitz knew the state of Greenlanders' life from an early age in a remote settlement, he was keen to work toward the betterment of Greenlanders' lives. Walsøe was an Icelandic descendent Dane. Although his incentive to move to Greenland might have been a personal quest to establish a new life in the Arctic, he devoted himself to the promotion of sheep farming in

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36   Tsurumi, "Naihatsuteki hattenron no keifu," 53; Tsurumi, *Naihatsuteki hattenron no tenkai*, 22–26.

southern Greenland. Gradually, the role of prime mover was taken on by insiders of the sheep farming community such as Ottooraq Frederiksen, who had an innovative view to make an epoch in Greenlanders' livelihood, and Kasper Dahl in the 1980s. Arduous though the task would be, these key persons were willing to take leadership roles in bettering a way of life, to facilitate local inhabitants to explore future possibilities or to reduce hindrances that would arise when locals wanted to gain spiritual fulfilment.

At the same time, the development of sheep farming was part of how southern Greenlanders adapted to changing climatic and environmental conditions during the 20th century. Small-scale, part-time sheep farmers (those who kept sheep as a sideline) could not cope with severe winters and thus disappeared. Yet, according to my field interviews, even those who quit sheep farming tried to seize other opportunities created through the climatic and environmental change (see below). On the other hand, people who found possibilities in sheep farming expanded the scale of sheep farming in order to cope with severe winters. As I have explained above, change in sea surface temperature has had significant impact on the cod stock and seal populations. At the zenith of the cod fishery, many people became fishers or migrated to a town with fish processing facilities in order to work there. The cooling sea surface temperature at the beginning of the 1970s, however, together with overfishing by fishing fleets from Europe, decreased the cod stock substantially, leading to the collapse of the cod fishery. After that, many fishers became seal hunters. Further, as the government closed down fish processing facilities, people who had worked there left the town, seeking for another viable livelihood. Among the sheep farmers I interviewed, there were some who had been fishers before the collapse of cod fishery.

The literature on local history also attests to the dynamic nature of demography in southern Greenland, although this is not limited to southern Greenland but to other regions in Greenland.[37] The impact of climatic and environmental change and following political decisions have affected local people's choice of livelihood options, and they moved to seek for a place where possibilities could open up for them. As a result, some communities grew or were newly created while others shrunk or disappeared. Therefore, the past rise and fall of communities reflect Greenlanders' human–environment relationship as intricately woven with environmental, social, and political change in southern Greenland.

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37   Fisker, Jørgen, and Nordiske Landes Bogforlag, ed., *Narssak': Igaliko, K'agssiarssuk, Narssarssuak'* (Gylling, Denmark: Narayana Press, 1981).

**5   The Need of 'Mainstreaming' Climate Change into the National
          Development Project**

A weakness of Tsurumi's Endogenous Development Theory may be that it
tends to emphasise solely the individual's role. It is reported that in adaptation
to climate change, vertical linkages from local to regional to national levels are
very important.[38] The development of sheep farming is a good example of the
collaboration of adaptation to climate change between the local level and the
government level. Climate change studies show that it is important to incorpo-
rate ('mainstreaming') measures for adaptation to climate change into wider
established development programs or to be consistent with other national sus-
tainable development projects.[39] In other words, it is not effective to imple-
ment adaptation measures for an individual sector in a vacuum—for example,
a sheep farming development program alone. Greenland's main industry is
fisheries, and more recently, oil and gas industry and mining are emerging in-
dustries for Greenland. Therefore, it is very important to plan integrated re-
source management with mainstreaming climate change remedies. Current-
ly, the Greenland government still has been seeking its resource development
policy.[40] In order to understand this situation, it is necessary to understand
the relationship between the Greenland government's intention to achieve
a higher level of self-determination and non-renewable resource develop-
ment.

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38   Adger, W. Neil, Nigel W. Arnell, and Emma L. Tompkins, "Successful Adaptation to Climate
      Change Across Scales," *Global Environmental Change* 15.2 (2005); Olsson, Per et al.,
      "Enhancing the Fit Through Adaptive Co-management: Creating and Maintaining Bridg-
      ing Functions for Matching Scales in the Kristianstads Vattenrike Biosphere Reserve
      Sweden," *Ecology and Society* 12.1 (2007), accessed April 29, 2014, http://www.ecologyand
      society.org/vol12/iss1/art28/.

39   Huq, Saleemul, Hannah Reid, and Laurel A. Murray, *Climate Change and Development
      Links*, *Gatekeeper Series* 123. (London: International Institute for Environment and Devel-
      opment (IIED), 2006); Halsnæs, Kirsten, and Sara Trærup, "Development and Climate
      Change: A Mainstreaming Approach for Assessing Economic, Social, and Environmental
      Impacts of Adaptation Measures," *Environmental Management* 43 (2009); Saito, Norio,
      "Mainstreaming Climate Change Adaptation in least developed Countries in South and
      Southeast Asia," *Mitigation and Adaptation Strategies for Global Change* 18 (2013).

40   Nuttall, Mark, "Zero-tolerance, Uranium and Greenland's Mining Future," *The Polar Jour-
      nal* 3.2 (2013).

5.1   *A Vague Expectation on Resource Development*

In 1979, Greenland assumed autonomous government through political nego-
tiation with Denmark although while remaining in the Danish Realm. More
recently, in June 2009, Greenland was given possibilities to achieve a higher
level of autonomy. According to this political rearrangement, Denmark will
still administer some areas of Greenland's domestic affairs such as policing
and the court system. Yet, it was decided that if Greenland could financially
afford these areas, Denmark would transfer responsibility over all areas of pub-
lic life including policing and the courts, except for the areas of the Constitu-
tion, foreign affairs, defence and security policy, the Supreme Court, and
currency and monetary policy.[41] With this, there has been a widespread ex-
pectation for a higher level of self-determination and, perhaps, 'independence
from Demark' among Greenlanders.[42]

   As far as the Greenland economy is concerned, however, it is difficult at
present for Greenland to assume jurisdictions over domestic affairs. Approxi-
mately 57 percent of Greenland's budget and about 30 percent of Greenland's
gross domestic product (GDP) is transferred by a block grant from Denmark.
Consequently, in order to achieve a higher level of autonomy, Greenland needs
to establish a self-sufficient economy.

   According to current estimates, the Arctic contains approximately 13 per-
cent of the world's unproven oil and approximately 30 percent of the world's
undiscovered natural gas.[43] Previously, it was effectively impossible to explore
oil and gas reserves, but melting sea ice means improved access. If Greenland
is able to develop an energy industry making use of these natural resources,
this will lead to a greater level of autonomy. Because of this, the Greenlandic
government is eager to develop oil and gas industry and mineral mining in-
cluding controversial uranium mining.

   Greenland's resource development is still at an early stage. As of summer
2012, only one company is operating a productive gold mine in southern

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41   Worm, Adam, "Arctic Security: A Greenlandic Perspective," in *Arctic Security in an Age of
      Climate Change*, ed. James Kraska (Cambridge: Cambridge University Press, 2011), 166–
      167.

42   Yet, the 2009 political arrangement for Greenland's self-government does not mean inde-
      pendence from Denmark because Denmark retains the above-mentioned jurisdictions.

43   Borgerson, Scott G., "The Great Game Moves North: As the Arctic Melts, Countries Vie for
      Control," *Foreign Affairs*, March 25, 2009, published by Council on Foreign Relations
      (CFR), accessed December 3, 2011. http://www.foreignaffairs.com/articles/64905/scott-g-
      borgerson/the-great-game-moves-north.

Greenland.[44] As for oil and gas exploration, a Scottish company did find evidence of petroleum reserves by 2012, but it is still questionable whether petroleum extraction is commercially viable.[45] The progressive conservative party (called, Gl. *Siumut*,) returned to power in the election in March 2013, and the policies of the progressive conservative party have lately attracted considerable attention from not only Greenlanders but also researchers outside Greenland and multinationals.[46]

Government initiatives aiming at resource development have aroused concerns about environmental degradation and pollution, triggering a national debate. From a viewpoint of Endogenous Development Theory, the question is whether external elements can be taken in in harmony with cultural and ecological conditions of locality. For this reason, the development of the energy industry has been controversial.

6   Concluding Remarks

Sheep farming entails neither life in a town nor life in a settlement, except for in Qassiarsuk and Igaliku. In Greenland, to become a full-time sheep farmer meant and still means becoming a pioneer or a settler in an isolated, uninhibited place. Farms are located miles and miles away from any other human habitation along the fjord shorelines. In addition, sheep farming is an arduous livelihood, necessitating farmers to be industrious, hard-working, ingenious, self-helping, and independent. While investigating a history of sheep farms in southern Greenland, we learned that sheep farms often did not permanently exist, but instead experienced abandonment and (re)establishment. This shows that not all farmers were able to fulfil their life's ambition. Some farmers had to close down their farms because of loneliness, hard labour, and lack of management skills. Nevertheless, envisioning a better life, sheep farmers settled in isolated areas and tried to carve an alternative life that would not have been realised otherwise. In order to cope with harsh winters, sheep farmers organised sheep farmers' associations, developing the system of sheep farming

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44   Harvey, Fiona, "Europe Looks to Open Up Greenland for Natural Resources Extraction," *The Guardian*, July 31, 2012, accessed January 15, 2013. http://www.guardian.co.uk/environ ment/2012/jul/31/europe-greenland-natural-resources.

45   Offshore staff, "Cairn Optimistic about Offshore Greenland Drilling Prospects," *Offshore Magazine*, March 19, 2013, accessed February 7, 2014, http://www.offshore-mag.com/arti cles/2013/03/cairn-optimistic-about-offshore-greenland-drilling-prospects.html.

46   Nuttull, "Zero-tolerance," 368–383.

with government support. Eventually, the adaptive process to climatic variations and change at the farmer's level and the government level led to the creation of a sheep farming tradition.

Today, in order to establish a self-sufficient economy Greenland is seeking to develop energy and mining industries in the course of climate change. Yet, Greenland has fisheries, sheep farming, and traditional sealing and whaling. Therefore, it would not be plausible to make a development plan for each industry and livelihood separately. If the government tries to promote energy and mining industries intensively at the cost of other industries and livelihoods, environmental concern would arise over these activities. The government development plan should not nullify local efforts to cope with climate change and to build resilient communities. Accordingly, it is necessary to make an integrated resource management plan and to have climate change remedies within it, so that development projects and adaptation to climate change will work in concert. In other words, development projects that will impact a local should not be promoted by type of industry alone but instead on a more localised basis of need. This will eventually lay the groundwork for the continuation of communities and the building of a sustainable nation.

Cultural Dynamics of Adaptation to Climate Change: An Example from the East Coast of the US

Grit Martinez and Michael J. Paolisso

Abstract

This contribution explores the role of culture in relation to local knowledge and values as displayed in the interpretations and actions of distinct groups of residents, concerning adapting to climate change in Dorchester County. Situated in the Mid-Atlantic area on the East Coast of the US, Dorchester County is at risk due to projected high sea level rise, flooding, salinisation and increased erosion. The research is based on a theoretical position that interpretation of risks and responses by distinct groups are shaped by frames or systems of cultural knowledge and values. For our study region, we were interested in which ways local knowledge and values of major cultural groups (e.g. watermen, farmers, winemakers, trappers), shape their understanding and perceptions of climate change risks, and in turn the consequences of that cultural knowledge in terms of vulnerability, adaptation and resilience. Our research also includes perspectives of under-represented, poor African Americans for whom threats posed by natural hazards and anthropogenic changes are disproportionately proximate. Furthermore, we incorporate perspectives of employees from the local zoning and planning department, views that allow us to better understand the policy contexts of our study groups' different cultural perspectives. Methodologically speaking, our findings are based on ethnographic methods (including qualitative interviews with key cultural groups in Dorchester County, and a quantitative survey from a workshop with coastal authorities from several Chesapeake Bay counties) as well as document analysis. In particular, we focus on images of nature, sense of place and change, risk perception and barriers. In addition, we also consider socio-economic factors such as economic development and public and private (coastal) property issues. We found that the beliefs and values of a distinct group of people in a given region shape their

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perceptions of climate change and hence their responses to changes in the environment and their communities.

1   Introduction

To argue that culture and climate change are inextricably linked is not controversial. For a wide range of climate researchers and policymakers, the argument that climate change affects cultures and that culture mediates mitigation and adaptation to climate change impacts is widely accepted. Where this consensus quickly begins to weaken is when we start questioning what the exact significance of culture is to climate change, mitigation and adaptation, and more specifically how we go about studying culture and climate change and incorporating those results into decisions and policies. These are obviously very broad questions, and addressing them requires more specific formulations, particularly establishing what in fact we mean when we say 'culture'.

As anthropologists know far too well, there are hundreds of definitions of 'culture'. For our purposes here, it is sufficient to group these definitions into two broad categories: first, culture is sometimes defined as all that a group of individuals know and share, including not only beliefs and values, but also behaviours, materials, social organisation, and rituals. This approach to culture is consistent with popular and public conceptualisations of culture, as being something distinct held by a group of people, which leads us to make statements about 'Italian' or 'German' culture or 'gang culture' or 'fishing culture'.[1] The second general approach to conceptualising culture is narrower in focus, though still broad in scope. In it, culture is treated as an ideational system. In this approach, culture comprises beliefs and values and is non-material and non-social. It consists of the knowledge that a group of individuals share and that helps define them as a distinct group, though group boundaries are dynamic and change as new knowledge and values become shared. In this second approach, culture is the intellectual material that influences behaviour, particularly social interactions and institutions (e.g. governance and religion), and material exchanges, including those linked to climate and the environment.[2]

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1   Kuper, Adam, *Culture: The Anthropologists' Account*. (Cambridge, MA: Harvard University Press, 2000).

2   Geertz, Clifford. *The Interpretation of Cultures* (New York: Basic Books, 1973); Ross, Norbert, *Culture and Cognition: Implications for Theory and Method* (Thousand Oaks: Sage Publications, 2004).

There is one other important dimension to our conceptualisations of culture that is important when we begin to think about the significance of culture to climate change. Most definitions of culture, either explicitly or implicitly, are place-based. By that, we mean that specific characteristics of the local environment influence the character of a culture and in turn that culture's capacity to adapt to changes. For example, since the late 19th century, anthropologists and geographers have documented the close dependence of culture on the local environment, including how cultures develop knowledge and practices to exploit natural resources and manage, with varying degrees of sustainability, the environment.[3] For a number of reasons, it makes sense to include a place-based focus in culture and climate change research and policymaking. First, many of the impacts of climate change are experienced at the local level, which is also the site for policy and program intervention. Thus, it is important to understand the cultural dimensions that affect mitigation and adaptation. Second, a focus on specific places and regions can lead to increased specificity in what we mean by culture and what aspects of culture in particular affect climate change, mitigation and adaptation. Third, a research and policy focus on culture and climate change would benefit from the comparison of case studies that are explicit in their theoretical and methodological approach to culture and capable of producing detailed and finely grained qualitative and quantitative findings.

In this chapter, we present findings from place-based cultural research on climate change, including both qualitative and quantitative findings. The place we report on is the lower Eastern Shore of the Chesapeake Bay, located within the Mid-Atlantic region of the east coast of the United States. As we describe further below, this low-lying area is at significant risk of increased flooding due to climate-induced sea level rise, threatening to alter the historical and dynamic coastal socio-ecological system. Our goal is to illustrate the variability in cultural knowledge and values that individuals living in the same location use to understand, evaluate and adapt to experienced and anticipated climate change impacts. We begin with a brief overview of our approach to cultural analysis, followed by a description of our study area—Dorchester County—at the lower eastern shore of Chesapeake Bay. We then present survey and interview results that illustrate how a knowledge-and-values approach to cultural research can reveal the range and diversity of core themes that are important to local communities and stakeholders as they struggle to understand and address

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3   Dove, Michael, and Carol Carpenter, ed., *Environmental Anthropology: A Historical Reader* (Malden: Blackwell Publishing, 2008); Steward, Julian, *Theory of Culture Change: The Methodology of Multilinear Evolution* (Urbana: University of Illinois Press, 1955).

climate change. We conclude with recommendations for future development and integration of a focus on culture in climate change research and policy.

1.1   *Culture as Knowledge and Values*

The study of culture is not a unified practice. For the purpose of this chapter we broadly conceptualise culture as a range of knowledge and values that frame or filter understandings of climate change and its mitigation and adaptation. We admit that this is not the only valuable approach to the study of culture, but we argue that a focus on the cultural knowledge and values is a useful starting place for a place-based study of culture and climate change. Our focus on cultural knowledge and values derives from fundamental research in the social sciences, particularly anthropology, in that it seeks to understand how knowledge is constructed through social mechanisms and then deployed by individuals to help them interpret and make sense of phenomena.

These shared knowledge and values constantly change and are dynamic. Culture is an ideational system that guides behaviour, though not perfectly: people often do not act according to their shared knowledge and values, but they do recognise that these shared values exist.[4] This sharing includes variations in strength: not all individuals share to the same degree. The focus of our cultural analysis is on the forms and specifics of cultural knowledge and values, including the degree to which they are shared or not. Finally, cultural knowledge and values are both explicit (people can state them) and implicit (the researcher must elicit this tacit knowledge and these values). In this latter case, this type of research looks at cognitive schemas or models that are powerful prototypical knowledge that again guides behaviour and interpretation.[5]

With this approach, we begin to conceptualise culture as the knowledge and values that allow you to behave in ways that others recognise as consistent with their own knowledge and values. Culture also provides the knowledge and values that allow a person to behave in ways that others recognise as appropriate (because they share the same knowledge and values) or different (because they do not share their knowledge and behaviours).[6] How is this relevant to our study? When climate change adaptation policies are developed and implemented, individuals (including those who developed the policies,

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4   D'Andrade, Roy, *Development of Cognitive Anthropology* (Cambridge: Cambridge University Press, 1995).

5   Holland, Dorothy, and Naomi Quinn, ed., *Cultural Models in Language and Thought* (Cambridge: Cambridge University Press, 1987).

6   Kempton, Willett, James S. Boster, and Jennifer A. Hartley, ed., *Environmental Values in American Culture* (Cambridge, MA: The MIT Press, 1995).

the policymakers and scientists) understand them using existing cultural knowledge and values, some of which may not be explicit but are still very important to the ways in which they believe in and respond to climate change and adaptation plans. In fact, an important part of research is to determine how cultural knowledge is shared within and between groups, as for example in how climate scientists or local government planners interact with members of our study groups.

2   Study Region

Our research focuses on the state of Maryland, particularly Dorchester County. This area was chosen due to its high projections for sea level rise. Recent studies have corroborated these projections and provide more specificity than the Intergovernmental Panel in Climate Change's (IPCC) 2007 findings. For example, in 2009 the US Environmental Protection Agency (EPA) released the synthesis report, *Coastal Sensitivity to Sea-level Rise: A Focus on the Mid-Atlantic Region*. The report concludes that the Mid-Atlantic region is one area of the US that will likely see the greatest impacts of climate change due to rising waters, subsidence, increased storms and a high population concentration along the coastline. The EPA identifies substantial shoreline areas that are already feeling the effects of sea level rise and erosion of tidal marshes.[7] The fact that the region is classified as a high-risk area expected to be affected by storm surge events and hurricanes was recently once again brought to the forefront of public awareness by Superstorm Sandy, which hit the East Coast in late October, 2012.

In 2007, under Governor Martin O'Malley a Climate Change Commission was put in place. One of the highlights of the Commission's work was a focus on adaptation strategies and measures to decrease vulnerability to sea level rise and storms in the Chesapeake Bay, which constitutes a significant portion of Maryland.

The Chesapeake Bay Program's Science and Technical Advisory Committee (STAC) produced a state-of-the-science review for climate change in the bay. The report estimates that in the 21st century, relative sea level rise will be

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7   Titus, James G. et al., *Coastal Sensitivity to Sea-level Rise: A Focus on the Mid-Atlantic Region*, Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research (Washington, D.C.: U.S. Climate Change Science Program, 2009).
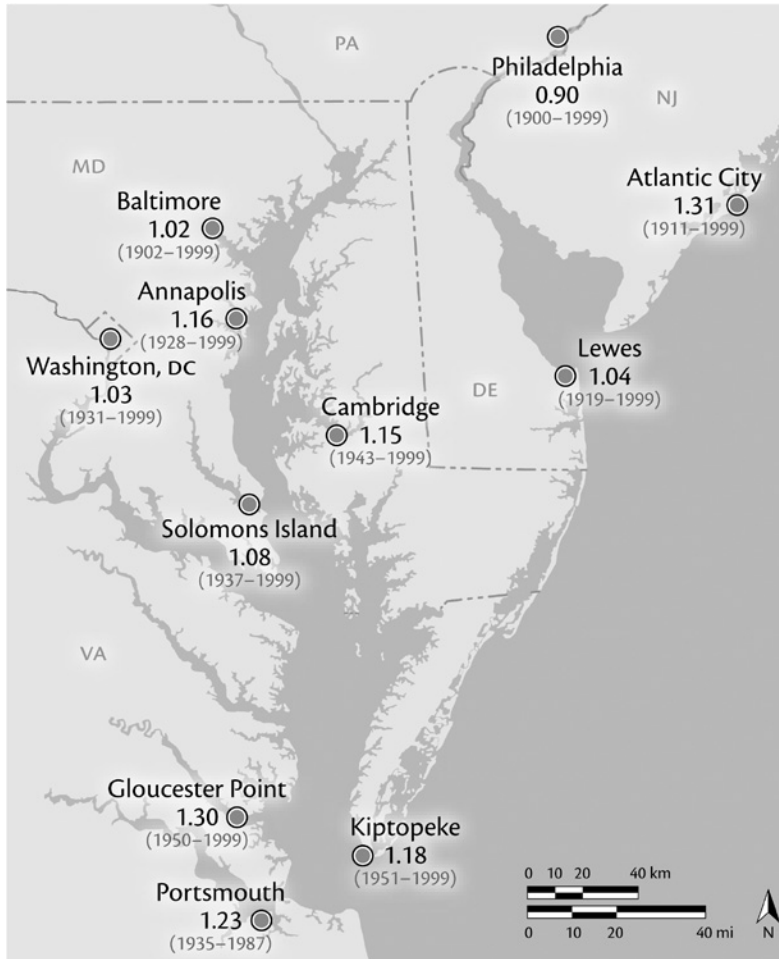
FIGURE 12.1   *Sea level rise rates (in ft/century) in the Chesapeake Bay*[8]

approximately 0.7 to 1.6 meters—with variability across the bay.[9] Tidal range is expected to increase, as is extreme wave height in storms. A rise in sea level of these magnitudes will have a dramatic multiplier effect on Maryland's coastal

8 Maryland Commission on Climate Change, *Adaptation and Response Working Group: Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level Rise and Coastal Storms* (Washington D.C.: Maryland Department of Natural Resources, 2008), 3.

9 Pyke, Christopher R. et al., "Climate Change and the Chesapeake Bay: State-of-the-Science Review and Recommendations," accessed 18 March, 2014. http://www.chesapeake.org/stac/Pubs/climchangereport.pdf.

environment and the communities along it. While the extent and range of impacts may vary, it is generally agreed that the low-lying Eastern shores, and Dorchester County in particular, are in the high-risk category, susceptible to erosion, flooding and inundation.

Since 2008, the Maryland Department of Natural Resources and the Maryland Chesapeake & Coastal Program have been active in designing instruments to support adaptation activities. In Maryland, for instance, a website entitled "Coast Smart Communities"[10] was put in place for counties and political decision makers. Counties who are interested in learning more about adaptation can obtain services from Maryland's coastal program. Although these services are available, the use of the services is voluntary, and consequently the more politically conservative regions of the state may not fully take advantage of the information. A variety of studies point out that a conservative political attitude in the US makes people less responsive to climate change issues. For instance, studies exist which show the relationship between political attitudes and climate change perception.[11] In the case of Dorchester County, one of the most vulnerable regions at the Chesapeake Bay, the politically conservative attitude of the local county council—who employs the staff of the county's planning and zoning department—has led to a situation where concern regarding environmental changes is often limited to the protection of property values and to attracting potential secondary house owners.[12] Nevertheless, during interviews with the Planning and Zoning department of Dorchester County, the staff were aware that:

> [...] they [the Maryland Department of Natural Resources and the Maryland Chesapeake and Coastal Program] do hold workshops, really, to inform you on not just shoreline initiatives you can do or what might be the best type of prevention for erosion, but also instruct the community on any type of new planning tools we can use. So they sort of go around the country, find different areas that are successful at using one certain type of zoning to accomplish a goal and then they give us suggestions on something that we may never have thought of using to try and change the development along the shoreline, and also a way that is very difficult for us is to do outreach to the people. I think a lot of people they knew that it

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10   Maryland Department of Natural Resources, "Coast Smart Communities," last updated June 24, 2013, accessed May 8, 2013. http://dnr.smaryland.gov/CoastSmart/.

11   Hoffman, Andrew J., "The Growing Climate Divide," *Nature Climate Change* 1 (2011): 195–196.

12   See footnote 9 in this article.

flooded, but they just didn't know the extent as to all the new science behind it, what they can do, safety issues, so it's just a way of educating us a lot, is the way I look at Coast Smart. Educating the officials and the planners both.[13]

Here we can see that although the staff of the county's planning department is aware of recommendation to adapt to changing conditions at the shores of the Chesapeake Bay, they do not have the mandate to widely promote or implement such suggested approaches. One interviewee concluded that

we are really kind of limited as to what we can advocate for in the planning office, because we don't want to do things that are contrary to what the elected officials think and want—because we work for them and they can fire us.[14]

2.1   *The Lower Eastern Shore of Chesapeake Bay (Dorchester County)*
The majority of Dorchester County is very low lying:

Dorchester County is probably the most vulnerable, alongside Somerset County, to sea level rise because we are the two lowest lying counties in the state. We have more tidal wetlands acreage-wise in Dorchester than any other county in the state. We have 60% of our county in the 100-year flood plain, land-wise, not population.[15]

In 2010, The Maryland Commission on Climate Change reported that the Eastern Shore of the Chesapeake Bay was slowly becoming submerged and that the state's shoreline is eroding at the high rate of approximately 580 acres per year.[16]

Maryland's eastern shore has been inhabited for four centuries.[17] Town names like Cambridge, Oxford, Salisbury, Easton or Vienna, and counties such as Kent, Queen Anne or Dorchester, refer to the European heritage of the early settlers. The county seat of Dorchester is the historic town of Cambridge

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13   Interview with Dorchester County Office of Planning & Zoning, Cambridge, Dorchester County, December 2012.

14   Interview, Dorchester County Office of Planning and Zoning, Cambridge, Dorchester County, December 2012.

15   Interview, Dorchester County Office of Planning & Zoning, 2012.

16   Maryland Commission on Climate Change, *Comprehensive Strategy*.

17   White, Terry L., and A.M. Fole, *A Dorchester County Scrapbook: "That Reminds Me of a Story"* (Elliott Island: Dogwood Ridge Books, 2012).

(founded in 1669). The county contains both tidal marsh and non-tidal wetlands balanced by sandy soils that are supporting large farms in the northern parts. Having been settled for hundreds of years, this maritime region has developed a strong set of regional traditions and values with skipjacks standing as a symbol of the cultural heritage of the Chesapeake Bay. The activities in the region, mostly fishing and farming, demand that many inhabitants have a close contact with nature. Even many activities outside of farming and fishing still retain a close tie with nature. For example, a local resident from Cambridge explained:

> When I went to elementary school in the 1960s there was a little island near Baron Island called Possum Island and that's completely gone. My son and my husband and I went over to look for Indian artifacts over there and there's just one little, one little clump of sand left. There's no trees, there used to be […] little houses and little shanties on there that people would go into to get warm if they were hunting ducks or geese. And there used to be shanties on there and a lot of woods and that's completely gone.[18]

Since 1973 the Chesapeake Bay Bridge has connected the state's rural Eastern Shore region with the more urban Western Shore (where the state capital Annapolis is located). A farmer/winemaker from Vienna, Dorchester County, elaborated:

> We are a very rural area here. People think of Maryland and they think of Baltimore and Washington and the city, but the area here on the Eastern shore—I mean it is not just that it is less people, it's not rushed, it's more laid back. In a lot of ways it's farther behind—you see a lot of people who don't have internet connection and don't have technology and things, but enjoy living here. It's a very calm and peaceful place to live.[19]

The bridge which connects Anne Arundel County and Queen Anne's County, also metaphorically joins the political liberal western shores with the political conservative eastern shores. A staff member of the Dorchester County Office of Planning and Zoning stated: "I feel very confident in telling you that the

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18   Interview from Cambridge, Dorchester County, December 2012

19   Interview from Vienna, Dorchester County, December 2012.

FIGURE 12.2   *Maryland counties (Dorchester County on the lower right)*[20]

people on the Eastern shore are much more conservative than the total population of Maryland."[21]

3   Study Sample and Methods

Our research examined two different scales: Maryland in general, and the specific location of Dorchester County on the Maryland's lower Eastern Shore. In this section, we will describe the main findings. A summarising table can be found at the end of the paper. We used qualitative interviews and field observations, quantitative opinion surveys from a workshop as well as document analysis. The research was undertaken between spring and winter 2012.

3.1   *Surveys amongst Employed Officials*
In 2012, a survey[22] was conducted amongst employed officials involved in decision-making for coastal management in several counties in Maryland. The data were collected during a workshop entitled "Obstacles to Adapting to Climate Change—a Discussion with Practitioners," held in Annapolis on 7 March

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20   Wikipedia, "Map of Maryland Counties," Image File, last updated 16 July, 2006, accessed
       January 21, 2015. http://en.wikipedia.org/wiki/File:Map_of_maryland_counties.jpg.

21   Interview, Dorchester County Office of Planning & Zoning, 2012.

22   Martinez, Grit, "Cultural Beliefs and Attitudes Regarding the Environment, Climate
       Change and Adaptation in Coastal Regions in the US," unpublished paper, 2012.

2012.[23] The purpose of the survey was to illustrate the perceptions of these planners and managers[24] of residents' behaviour and willingness to acknowledge environmental changes and adapt according to their individual capacities. It was also intended to understand the role local values play in this process according to the perception of the audience. In total, 13 questions were asked to the audience, which comprised 20 participants. Here we focus and present those questions that explicitly dealt with culture, environmental change and climate. To analyse the data we used box plots.

The participants were asked to join the survey via a web platform with the results being instantly viewable. Attendees participated in the moderated survey anonymously via their personal laptops or smart phones with web access, or text messaging.

3.2   *Presentation of Outcomes and Discussion: Questions and Findings on Coastal Identity and Environmental Change*

The following section presents the results of a survey on culture, environmental change and climate. The first set of questions looked at coastal identity and environmental change. The results are illustrated in figure 12.3.

Concerning the connection between the identity of people and the coastal environment in which they live, the connection is felt to be very strong by the participants (see figure 12.3.A). The political conservative value that would consider the coastal environment to be something that does not belong to everyone is pronounced, although the perceptions of the audience vary (see figure 12.3.B). The survey participants thought that the people in their region tend to prefer private action as a means to adapt to coastal changes more than they did public action (see figure 12.3.C). The connection people make between environmental changes and a changing climate does not seem to be strong (see figure 12.3.D).

3.3   *Findings on Coastal Identity and Environmental Change*

The majority of the participants stated that there is very strong connection between the identity of the people and the coastal environment in which they

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23   For more, see: Ecologic Institute, "US-German Workshop: Obstacles to Adapting to Climate Change—a Discussion with Practitioners," last updated March 7, 2012, accessed January 21, 2015. http://www.ecologic.eu/4642.

24   The participants in Maryland included planners and managers from city departments of natural resource and floodplains representing counties from the western and eastern shores of the Chesapeake Bay—Annapolis, Baltimore, Cambridge, Denton; representatives from the Maryland Departments of Environment and Natural Resources; and the University of Maryland.

live. This is probably true for most regions. Nevertheless, the perception of the coastal environment as a common good is less explicit, which differs significantly, for example, from European perceptions.[25] In Maryland, open coastal areas tend to be the exception (such as Ocean city, an Atlantic resort town in Worchester County which is a frequent destination for vacationers). In contrast the shores of the Chesapeake Bay consist of rather small and narrow coastal strips and semi-coastal wetlands that have been inhabited for centuries and belong to individual families. It can be considered that the physical conditions of this place compounded with values of a private property and hence responsibility might have helped shape these perceptions. Officials involved in coastal management decision-making frequently deal with the requests of private property owners. So the average attitude of people they deal with is driven by the belief that private measures are the best way of engaging with a changing environment.

3.4 *Questions and Findings on Culture and Environmental Policies*

The second set of questions presented here looks at coastal identity and environmental change. The findings are presented in figure 12.4.

In situations involving citizens in the identification of environmental problems the people attending the workshop thought that residents were not very much involved (see figure 12.4.A). When asked about the involvement of local residents in the local decision making processes the participants said that the local residents are somewhat involved but not to a great extent (see figure 12.4.B). Even though the residents themselves were not considered to be overly involved in the decision making process, the participants claimed that culture is strongly considered in the resolution of environmental problems (see figure 12.4.C). The participants strongly agreed that using the term 'climate change' is a barrier to facilitating adaptation (see figure 12.4.D).

The results suggest that coastal planners think that residents do have some degree of involvement in formulating problems and solutions to the coastal variability and natural changes in their living spaces. By contrast, implementing strategies that might involve long-term change in behaviour or living conditions seem to be less acceptable for most residents, according to the perception of the coastal authorities. Even though the residents themselves were not considered to be overly involved in the decision-making process, decision makers

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25   European Commission, *Integrated Coastal Zone Management: Participation Practices in Europe* (Luxembourg: Publication Office of the European Union, 2010), accessed January 21, 2015. http://ec.europa.eu/environment/iczm/pdf/participation%20practices%20our coast.pdf.

A. How strong would you describe the connection between the identity of people in your area and the coastal environment in which they live? (1=No connection, 7=Very strong connection)

Mean	N	Std. Deviation
6.00	9.00	1.32
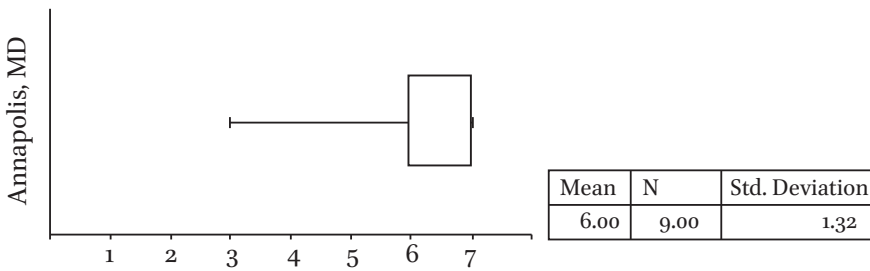
FIGURE 12.3A   *Coastal identity and environmental change*

B. For people in your region, the idea that the coastal environment is a good that belongs to everyone is: (1=Nonexistent, 7=Very strong)

Mean	N	Std. Deviation
4.67	12.00	2.23
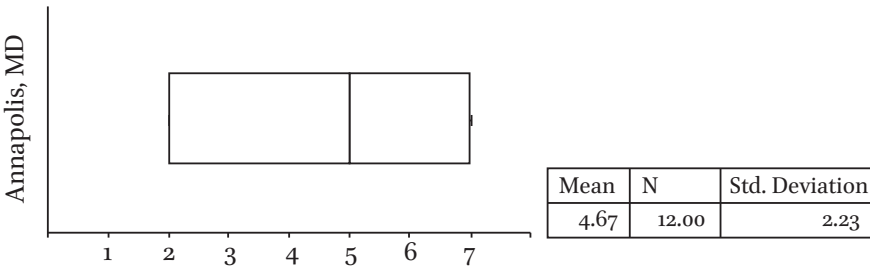
FIGURE 12.3B   *Coastal environment as a common good*

C. People in your region prefer to adapt to coastal changes and manage coastal risks through: (1=Private action, 7=Public action, including government)

Mean	N	Std. Deviation
3.18	11.00	1.54
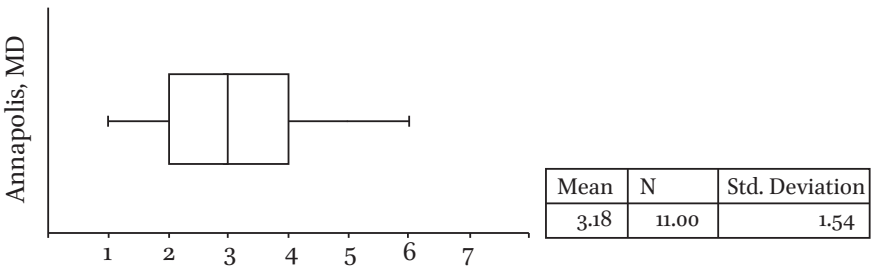
FIGURE 12.3C   *Involvement in coastal management*

D. How aware are people in your area about changes to coastal shape (for example: erosion) and the possible effects of climate change? (for example: SLR, storm surges) (1=Not aware/ interested, 7=Very aware/interested)

Mean	N	Std. Deviation
4.20	10.00	1.69
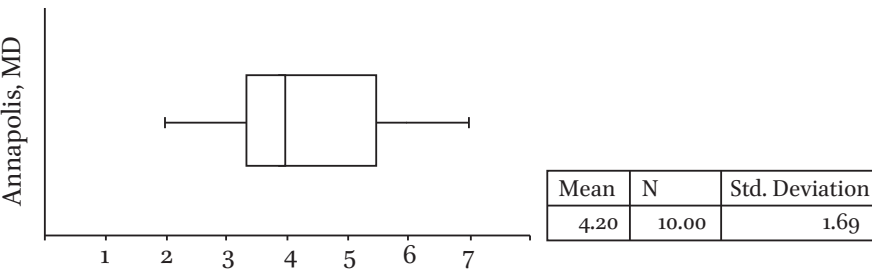
FIGURE 12.3D   *Awareness of changes*

FIGURE 12.3(A–D)   *Perceptions about cultural sense of place and coastal behaviour*

A. How much are citizens involved in identifying environmental problems? (1=Not involved at all, 7=Very involved)

Mean	N	Std. Deviation
3.30	10.00	1.16
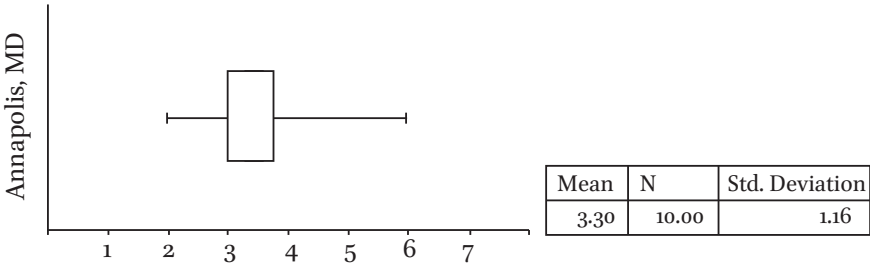
FIGURE 12.4A

B. In your region, how actively involved are the local inhabitants in local level decision making processes concerning regional environmental issues? (1=Not involved at all, 7=Very involved)

Mean	N	Std. Deviation
3.75	12.00	1.48
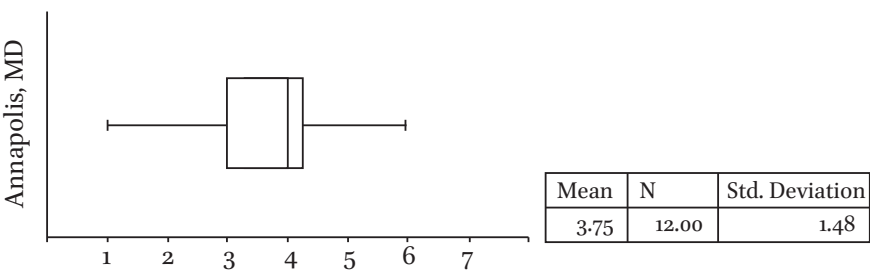
FIGURE 12.4B

C. How much is the local/regional culture considered in the resolution of environmental prob-
lems? (1=Not considered, 7=Very strongly considered)

Mean	N	Std. Deviation
4.25	12.00	1.96
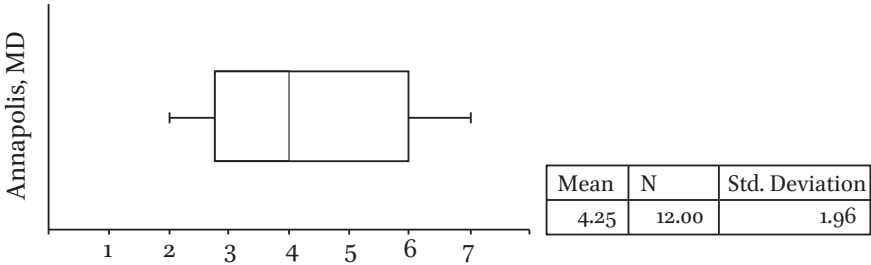
FIGURE 12.4C

D. When dealing with the citizens of your region, describing adaptation as a "climate change
issue" tends to: (1=Greatly hinder implementation, 7=Greatly facilitate implementation)

Mean	N	Std. Deviation
2.27	11.00	0.65
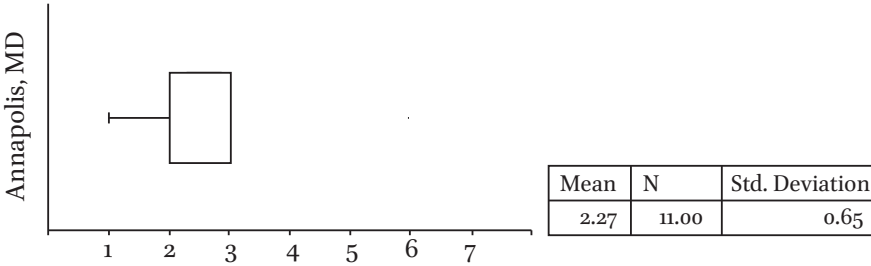
FIGURE 12.4D

FIGURE 12.4(A–D)   *Perceptions of community based activities in coastal regions*

claimed that culture is strongly considered in the resolution of environmental problems. These perceptions were echoed in another independent set of interviews undertaken in a subsequent investigation in winter 2012/2013 with political decision makers in Dorchester County. Here the focus was transatlantic research between the cultural differences in local approaches to coastal adaptation in the Chesapeake Bay (Dorcherster County) and the the German Baltic Sea coast (Ummanz and Timmendorf Beach).

In the next section we will discuss the perceptions of the residents themselves as they have been stated by major cultural groups in Dorchester County.

4   Semi-Structured Interviews

4.1   *Presentation of Outcomes and Discussion*
In December 2012, six semi-structured in-depth interviews were conducted with residents of Dorchester County, namely in the areas in and around the towns of Cambridge and Vienna.

The informants represented a variety of groups encompassing Dorchester's cultural heritage, such as watermen, farmers, winegrowers, traditional hunters and the African American community. In addition, interviews with specialists, people who are closest to those who will implement decisions on environmental policies, e.g. representatives from the planning and zoning authority of Dorchester County were conducted.

The individual length of each interview varied between one and a half and four hours. Interviews were guided by a protocol of written questions that were asked aloud. The questions encouraged paragraph-length responses, rather than one-word or sentence-length answers. Given that conversations mainly took place in a comfortable environment, such as on the deck of a boat and in public locations, the informants were given scope to elaborate and bring up new topics they considered relevant. All interviews were recorded.

The interviews focused on the holistic context, the environment and the cultural group to which the interviewee belongs. Typically, the interview began with several questions about the personal background, geographic and cultural contexts of the interviewed person. This was followed by general questions about environmental changes that the interviewees, and/or their ancestors, have experienced, about individual perceptions of risks, and about local culture and traditions related to the group and the natural environment in which the interviewee lives. This led to specific questions about climate change and its impacts, adaptive capacity and/or proposed solutions to deal with those changes, assessment of environmental policies and observed barriers

to adaptation. Based on the inductive approach in the social sciences, answers were arranged in the following five categories:

1. image of nature
2. sense of place
3. sense of change
4. adaptive capacity/proposed solutions
5. barriers

These categories built the frame to exploit the environmental perceptions and activities according to the informant's cultural belonging, beliefs and values.

4.2   *Findings*

The inferences emerging from the interviews are grouped around these five categories, and are supported by quotations from the interviews, allowing informants to speak in their own words.

4.2.1   Image of Nature

One of the most commonly expressed justifications for being concerned about the environment in which the informants live in particular (and 'nature' in general) is that it is a basis for their personal life and economic activities. The interviews revealed that the informants from Dorchester County are motivated by a diversity of values, ranging from the conviction that nature has a right in itself, to the idea that nature exists for human use and as a provider of economic livelihood. Most of the informants thought of nature as being very sensitive to intervention. For instance, a representative of the waterman community claimed:

> It is a very fine balance. If you go over the line, you are gonna destroy nature. If you don't take care of it, it's not gonna be here for all generations […]. I grew up in a time when you could go out and it was unlimited how many oysters you could catch. You go out here and catch hundreds of bushel crab. The other boat I had, there was no problem with me coming up with 100, 150 baskets of crab a day. Now, you're not even allowed to have that many females. If it's not controlled, if it's not kept in check, we're not going to have it for generations down the road.[26]

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26   Interview from Cambridge, Dorchester County, December 2012.

One African American interviewee drew a more drastic comparison referring to the extinction of Native American cultures by the elimination of their natural source of life.

> I think if we don't treat it carefully, it's going to be gone. I think humans can destroy just about everything. You can go out here and shoot the last duck, but if you preserve, if you stay within your limits—there are ways you can harvest deer, duck, oysters, whatever, if you stay within your limits. But you can't go past it, or you gonna do away with it. You're gonna go like the Indians [...]—you're gonna be gone. Buffalo. What happened to the buffalo? We shot 'em to extinction.[27]

For the watermen and trappers, economic concerns are becoming a stronger issue than in the past:

> Most of the watermen, the money they make in the fall, which is September, October, November, will keep them through January and February and March, until spring time comes again. But for the last couple of years not any of the watermen made any money [...] you know sometimes my husband would only make 200 dollars clear, you know after he paid his expenses, a week out on the water working 6 days crabbing.[28]

Here we can see that different cultural groups in Dorchester County express similar ethical systems regarding the human treatment of non-human nature. Although the interviewees agree on a general approach of preservation of a natural and unspoilt living space, economic interests are a profound part of their perception and hence accommodate a certain readiness to accept, manage and cope with human changes in the natural non-human system.

4.2.2   Sense of Place

For all informants, the concept of nature goes far beyond health and economic values to ideas that are expressed by using the metaphor of 'home'. A representative of the muskrat hunting community explained:

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27   Interview from Cambridge, Dorchester County, December 2012.
28   Ibid.

> I have no urge to go anywhere. It's a life. It's not a whole lot of money, but it's a totally different lifestyle. If I had to go across that Bay Bridge and go to work every day, I couldn't handle it. It's not something I want to do.[29]

And another informant from the farmer community confirmed that:

> […] people are very proud of where they live, of the traditions that we have—traditions of farming and country living. A lot of people were raised on the Bay and on the marsh. The crabs and the oysters and the fishing and all the things that go with it […].[30]

These quotes indicate that place attachment is high amongst the residents of Dorchester County. Combined with the above stated perception of nature it can be assumed that these particular values could be further explored to engage people in the process of preserving and developing their 'home'.

4.2.3 Sense of Change

All of the interviewees had a clear model of interdependencies in nature. They had already observed that removing or adding species and a changing climate does cause other significant change that is connected to their personal life and economic circumstances. As described earlier, the main changes for residents in the Chesapeake Bay are connected to rising sea levels and erosion, storm surges, and pollution of water bodies. This is also perceived by our local informants (here, a representative of the African American community):

> I think there are challenges now that the ancestors in this region didn't have to face before. You know, the land changing and moving was something that they saw, but the ecology of the species, I think they probably didn't have a base. I mean nobody knows what to do about it.[31]

Since most of the informants have families that have lived for many generations in Dorchester County, they are very familiar with its geographical shapes, its landmarks and human artifacts. Hence, many of them were able to sense changes through the lenses of their ancestors, such as through the stories they have been told or pictures they have seen. A waterman from Cambridge, Dorchester County stated:

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29   Interview from Cambridge, Dorchester County, December 2012.
30   Interview from Vienna, Dorchester County, December 2012.
31   Interview from Cambridge, Dorchester County, December 2012.

> My great-grandfather [...] he was on an island, down below the one I was
> raised on, and it kind of got dishabited around 1925 when everyone
> moved off of it. The time before that they moved off of Highland's Island
> [...] where it just got hard to get back and forth to 'em and most of the
> bridges like that one washed out in 1933 down there. I think he was born
> in 1920 and he was probably one of the last families moved off there and
> that was like 1926.[32]

And the same informant stated:

> [...] the whole island, it was probably close to 800 acres, now it's probably
> less than 4 acres [...]. It's just—Hooper's Island's is going. I don't now
> have the pictures, I do know where they're [...] in the 60s they've got pic-
> tures, one of the guys had an airplane and he flew and took some aerial
> pictures, and it was like half a mile of land on the bay shore—there's no
> land there now [...]. Hooper's island is definitely going away![33]

In the above two statements we can see that interviewees refer to islands that
have disappeared and where people had to move already or will have to move
in the future.

Another interviewee added that in the memories of the "older generation in
the southern end of the county who maybe were alive as young people or chil-
dren in the '30s and '40s [...] farms, tomato farms, and vegetable farms in south
Dorchester [...] and canning houses down there where they would actually can
the tomatoes"[34] are still present "which then had salt intrusion and it's turned
into wetlands."[35]

From the perspective of the diminishing community of watermen, a severe
threat is bad water quality. Looking back over fifty years of his own life, one
informant framed the pollution problem of the Chesapeake Bay in the follow-
ing words:

> You know back prior to Agnes, which was a severe hurricane that we had
> in the '70s, the bay grasses were off the bottom growing that tall, and it
> never did get rough around the bay shores. You could leave your boats on
> the western side of Hooper's Island. But when we got all that influx of

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32   Interview from Cambridge, Dorchester County, December 2012.
33   Ibid.
34   Interview, Dorchester County, Planning and Zoning Department, December 2012.
35   Ibid.

chemicals coming down the Bay it killed all the grasses off in the '70s and they have never rebounded like that any more. You could go down to Hooper's Straights, and this was in the '60s, and you would have to actually look down and see a patch of clear bottom where there wasn't any grass in 10–12 feet of water, to put a crab pot out. There was that much grass growing that you could see bottom down in that deep of water down in Hooper's Straights. Things have definitely changed. Now visibility here is probably less than 2 feet. It's just, things have changed.[36]

These quotations suggest a belief that nature adjusts little by little to small changes, which finally result in large ones. The contextuality of the interviews further suggests that people think, for example, about the vanishing of islands as a natural process driven by storms and erosion rather than by climate change, but acknowledge that climate change is part of this larger process.[37]

Also noteworthy is the fact that most of the interviewees draw comparisons between the physical look of a landscape, or the patterns of vegetation and animals in relation to time and space, to describe the change in their immediate environment. A farmer/winemaker from Dorchester County stated:

There are two main things that I've really noticed over the last five years really. […] That to me, there's something going on. One, corn tassels grow earlier every year for us. And that's pure heat units, it's a certain amount of heat units, and it tassels and starts to drop the pollen. And that seems to be happening earlier and earlier every year. It used to be that we expected around the 4th of July to see the first tassels coming out on the corn—really, we're seeing the first tassels coming out ten days before that and by the time July 4th rolls around, the last of it's coming through pollination. So that's happening earlier and earlier every year and corn seems to be finishing up earlier and earlier every year. And the other thing, we've certainly seen a change in weather patterns here. Most of the Eastern shore is sandy, but there's a spot here, south of Route 50 that's heavier clays, we have most of the heavier clays around here. And up until ten years ago, you might have one year out of ten where you didn't get enough rain, but it rained enough and these clay soils hug the moisture well enough. Nobody around here had irrigation—you didn't need it. They did over on the sandier parts, but not here. Certainly if you look

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36   Interview, Dorchester County, Planning and Zoning Department, December 2012.

37   See also Cronin, B. William, *The Disappearing Islands of the Chesapeake* (Baltimore: John Hopkins University Press, 2005).

around now you see irrigation pivots all over the place because even on this clay land that holds water real well, there's just not enough rain. It's been dry every year for the last four years.[38]

These quotes demonstrate that interviewees are very much aware of their changing habitats although they draw somewhat different conclusions. While for the representative of the farmer community the variances in weather patterns also hold opportunities—such as growing and marketing wine (which he started a decade ago)—for the representatives of the watermen there appears to be a more pessimistic outlook for maintaining his profession and his living space, as described in more detail below.

4.2.4   Adaptive Capacity/Proposed Solutions

While the representative of the farming community confirmed the application of a variety of adaptation strategies, ranging from crop switches (including changing from corn to wine) to the installation of irrigation systems,[39] a waterman from Cambridge expressed a more pessimistic outlook:

> I think there are challenges now that the ancestors in this region didn't have to face before. You know the land changing and moving was something that they saw, but the ecology of the species [...]. I mean nobody knows what to do about it [...], you know they go up and down, so that's where it really hurts people. They can't adapt, they're not able to adapt anymore to the fishery [...].[40]

For most of the informants, the consideration of retreat is also becoming an issue. Although hurricanes and storms are nothing new for the residents of Dorchester County and have been rather a seasonal annoyance, the situation is now changing. As the oceans warm up and hurricanes are growing to be more intense—which is happening against the backdrop of strong rising sea levels in the area—the Eastern shores of the Chesapeake Bay are under existential threat in the span of this century. A muskrat skinner from Dorchester County explained:

> I don't think there could be something done to save our place or to make it more resistant or to adapt more to the circumstances [...] no because I

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38   Interview from Cambridge, Dorchester County, December 2012.
39   Interview from Cambridge, Dorchester County, December 2012.
40   Ibid.

think [...] the bay water is rising you know it probably has a lot to do with uhmm up in Alaska and all the ice melt [...] and the tides do get higher and higher [...]. And I don't think that it would happen that we build defences [...] down here where we live [...] we are always taught that if you only afford a Volkswagen car that you don't go buy a Cadillac that costs five times that amount. You stay within your means.[41]

The informant of the African American community representing the lower income group of Dorchester County suggested accordingly: "you don't want to spend so much money when it's gonna go away."[42]

4.2.5   Barriers

The interviews have revealed significant agreement in the environmental views, perceptions of home/sense of place, and the changes these places have undergone in a period of only half a century. They also have shown similarities in the perception of barriers which are important in order to understand how resilience—the capacity to mitigate (diminish impacts) or adapt (respond to change)—within specific socio-cultural settings of communities can be supported and adaptive capacity be strengthened. Those barriers were mostly affiliated with specific policies and governance structures at the county level (Dorchester County) but they are also embedded in the social, cultural and economic setting of the cultural groups.

With regards to the political barriers, the informant from the Planning and Zoning department of Dorchester County stated:

As I said, we're probably one of the most conservative counties and pro-property rights counties in the State of Maryland, which is really contrary to the situation [...]. So we're really kind of limited as to what we can advocate for in the planning office, because we don't want to do things that are contrary to what the elected officials think and want—because we work for them and they can fire us.[43]

The representative of the farmer and wineries community in Dorchester County confirmed the above interpretation:

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41   Interview from Cambridge, Dorchester County, December 2012.

42   Ibid.

43   Interview, Dorchester, Planning and Zoning Department, December 2012.

No, they [the elected officials] are not encouraging people to do much. They're not acting at all like there's a problem. Dorchester County here, the county we live in, I just mentioned that there's lots of marshes and wetlands because we're right on the Bay and so many rivers and one of the projections that we've heard is that the sea level will rise two and a half feet or so. In a county this low, I'm only eight feet above sea level here, if the sea level rises two and a half feet, we could lose over a quarter of the county, it's so low. But people continually build new houses on that land, move out there, live out there [...]. Yeah. I think it's easier to ignore it. It's easier to say "there's nothing we can do about it, it's too expensive". Especially in this county—they want people to come in and invest in houses because they get taxes from it. They're not going to discourage them from that.[44]

In addition to the remark about the resistance of the county commission, we found another form of obstacle that seems to be embedded in the cultural habits of a remote way of living, especially in the southern parts of Dorchester County. A muskrat skinner from Dorchester County explained:

In my family [...] we try to live off the land as much as we can [...] you know we have deer and the muskrat and the duck and goose. And the oysters and the crabs and the fish [...] and we have big gardens in the summer.[45]

This quote demonstrates that there is a tendency at the Eastern shores of the Chesapeake Bay that people are usually acting independently and within the scope of their needs and beliefs, which—according to a local waterman—does not necessarily coincide with the state or county political approaches towards climate change: "And then people are still trying to make a living and they're coming up against a lot of political and regulatory changes that past generations didn't have to deal with either."[46]

The perspective that the people of Dorchester County tend to prefer to act independently was confirmed by the interviewee from Dorchester Planning and Zoning Department:

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44   Interview from Cambridge, Dorchester County, December 2012.
45   Interview from Cambridge Dorchester County, December 2012.
46   Interview with watermen, Cambridge, December 2012.

Well we have 1700 miles of shoreline, just in Dorchester, and we have, as I said earlier, roughly 60 percent of the land in the 100-year flood hazard area, which is the area that's mapped by the federal government as being the most vulnerable to flooding from storm events. I don't know how many acres that represents but the vast majority would be privately owned [...]. Because a lot of our property owners, it dates back to the maritime uses in the Chesapeake and a lot of the property owners were fishermen and crab [fishers], you know. Huh, that is something that they never allowed, if we couldn't possibly take the position that this huge area, that represents more than half of our country, needs to be left in nature [...].[47]

5   Conclusion

Responding to climate change in coastal regions is not just a matter of infra-structural adjustments, like building storm-surge barriers and dykes or the amendment of zoning and building codes. Instead, it is a multi-layered process of societal transformations in which the beliefs and values of distinct groups of people in a given region shape their perception of climate change, their inter-pretations and hence their responses to their changing environment and homes. These beliefs and values influence or define the reactions of these groups—e.g. rejection, acceptance, confrontation etc.—towards top down, bottom up, autonomous or planned adaptation policies/actions as well as in-fluence the degrees of the group's engagement, e.g. interaction, participation, shielding.

As illustrated in this chapter, culture filters and shapes interpretation of risks, changes and responses. In this respect, we were interested in how impor-tant cultural groups (watermen, farmers, winemakers, trappers, representa-tives of the African American community) in the extremely endangered region of Dorchester County are interpreting environmental changes and how their way of knowing affects their way of responding. Some of their views were also counterchecked with the views of specialists and people who are closest to those who implement decisions on environmental policies such as maritime land use, zoning and construction.

The representatives of these groups gave some examples of local culture, beliefs and practices that are important to them, such as: living in harmony with their maritime natural environment; securing economic livelihood and

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47   Interview, Dorchester Planning and Zoning Department, December 2012.

sustainability of fishing and oyster grounds; awareness of the connection be-
tween the increase in sea level rise, storm surge frequency and a changing cli-
mate; expressing motivation for adaptation activities (such as elevating houses
or building them further away from the shores; changing the patterns of har-
vesting fish, oysters or growing new crops and/ or thinking about retreat); and
contesting low or no communication between the planning authorities, the
communities and their cultural groups.

The survey and interviews also demonstrated that coastal policy makers
and environmental planners think that culture is important although they are
not very aware of the full meaning of 'culture' nor of possible ways of including
cultural knowledge in their decision-making. Nevertheless, both groups of in-
formants revealed that neither coastal decision makers nor residents deem
cultural aspects as being not important.

Given this mindset and the significance of the 'sinking land' problematic at
the Eastern shores of the Chesapeake Bay, there might be prospects that local
political decision makers and coastal authorities will more progressively en-
gage in a communication process with local residents where local traditions
and values are acknowledged. In fact, since 2012 the Environmental Protection
Agency supports projects which explore how communities at the vulnerable
Eastern shores of the Cheapeake Bay anticipate coping with flooding related to
sea-level rise in the future.[48]

In this chapter, we aimed to illustrate that regional and local policies for
adaption to a changing climate must be developed within a given cultural per-
spective and with understanding/appreciation of local knowledge, values and
belief systems if they aim to be grounded and sustainable. Nevertheless, not
only culture but also politics influences adaptation strategies and activities.
Here, we demonstrated the role of culture rather than of politics in a multi-
layered process of societal transformation which a changing climate brings
about.

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48   More information can be found under: "Social-Ecological Resiliance and Adaptation on
      the Eastern Shore of the Chesapeake Bay, accessed 18 March, 2014. http://cfpub.epa.gov/
      ncer_abstracts/index.cfm/fuseaction/display.abstractDetail/abstract/9955.

TABLE 12.1   *Key findings from the survey and interviews in Maryland*

Study site	Methodology/ Timeframe	Key findings on how values and beliefs shape Interpretation of environmental risks and policy responses
Annapolis (Maryland)	Survey among officials involved in decision-making for coastal management in several counties in Maryland. March 2012	The physical size of a place and the sense of belonging to the land shape the perceptions of coastal protection and types of activity chosen. Coastal identity is a strong driver regarding protection/ maintenance of coastal properties. On the contrary, physical infrastructure and landmarks can provide barriers regarding long-term change in behaviour or living conditions when dealing with changes in the coastal environment. Using the term 'climate change' tends to hinder the facilitation of adaptation measures. Private action as a means to adapt to coastal changes seems to be preferred over public or state driven action.
Dorchester County (Maryland)	Semi-structured in-depth interviews with residents who represent the main groups of Dorchester's cultural heritage, such as watermen, farmers, winegrowers, trappers, and the African American community. Interviews took also place with specialists—people who are closest to those who will implement decisions on environmental policies—here the Planning and Zoning Authority of Dorchester County. December 2012	Residents of Dorchester County are motivated by a diversity of values, ranging from the conviction that nature has a right in itself to human utility and a connotation to economic values/securing their livelihood. They express a range of beliefs regarding climate change and sea level rise science. Generally residents feel that their culture is not included in planning and decision making. The distribution of interest in climate change related issues appears to be evenly and closely connected to a sense of "home"/sense of place and the maritime culture. Cultural values are a necessary basis for environmental activities and closely interlink with personal immaterial or material benefits.

"Back to the Future": Imagining Climate Change Futures in US American Literature

Antonia Mehnert

Abstract

Our very understanding and experience of climate change has been shaped by an all-encompassing scientific interpretation of the weather. However, the statistical graphs of emission scenarios and other data diagrams have not only enforced a division between the scientific and the human realm—increased levels of data and abstraction coupled with the lack of a representational means of seeing ourselves as actors within these data—but has for a long time suppressed other perceptions of this unprecedented phenomenon. In order to understand global warming we need to consider it within a broader context of discourses and narratives, which implies an awareness of social and cultural spheres through which climatic changes are brought to the fore. Literature and the imaginary realm are thus of importance to the project of communicating the complexity of climate change, evoking feelings about it and of raising questions about the ethical and socio-political ramifications of climate change. This article aims to make a contribution to the only recently emerging discourse on climate change fiction. After a general discussion and contextualisation of literature and climate change, this article analyses two climate change fictions, T.C. Boyle's novel *A Friend of the Earth* and Kim Stanley Robinson's *Science in the Capital Trilogy,* in order to discuss how literature deals with the representational challenges of climate change, focusing on the issue of time and the communication of risks and uncertainties.

1   Introduction

> The national news aired hallucinatory images of flooded New York. A traffic light bent like a cheap spoon [...]. A Gramercy Park brownstone had caught on fire [...]. And finally the watery outlines of bodies floating like lily pads on Second Avenue.[1]

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1   Rich, Nathaniel, *Odds Against Tomorrow* (New York: Farrar, Straus & Giroux, 2013), 202.

When Hurricane Sandy hit New York on its destructive path in 2012, writer Nathaniel Rich was just in the final editing process of his latest novel *Odds Against Tomorrow* from which the introductory lines of this article are taken. All of a sudden, the near-future events that he had described in his book were no longer solely fictional. Carolyn Kormann, literary critic for the *New Yorker*, also notes that "novels that would once have been called science fiction can be read as social realism" in times of climate change.[2] Moreover, the overlapping of near-future fictional and present-day real events here notably shows that climate change is not something happening in the far-off future but instead underscores its intricate relation to the present. Over the course of his novel, Rich also reminds readers that the flooding of New York is not a one-time event but that the weather will become increasingly erratic. More important than the parallels between fiction and reality in this context is Rich's detailed description of his protagonist's response to climate risks because he thereby provides insight into the personal and emotional dimension of the "intricacies of planetary collapse".[3]

Rich's novel thus offers a point of departure in examining cultural practices and their imaginaries about this otherwise elusive and abstract phenomenon called climate change. Instead of reducing contemporary global environmental problems, such as climate change, solely to managerial issues which can be solved by techno-scientific correction, cultural artefacts such as films and literature become part of a kind of political aesthetics that intervenes in current debates by addressing not only what could be changed today but also by showing how we might adapt to future changes.[4] Too often, as Timothy Luke elaborates, "'the facts of life' pass into fields of control for disciplines of eco-knowledge and spheres of intervention for their management as geo-power at various

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2   Korman, Carolyn, "Scenes from a Melting Planet: On the Climate Change Novel," *The New Yorker*, July 3, 2013, accessed December 12, 2013. http://www.newyorker.com/online/blogs/books/2013/07/scenes-from-a-melting-planet.html. It needs to be mentioned at this point, however, that singular weather events such as Superstorm Sandy cannot be traced back to a long-term phenomenon like climate change. However, scientists point out that global warming has led to conditions in which the intensity and frequency of tropical storms is likely to increase. Cf. Intergovernmental Panel on Climate Change (IPCC), "Summary for Policy Makers," in *Climate Change 2013: The Physical Science Basis: Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. T.F. Stocker et al. Cambridge (New York: Cambridge University Press, 2013), accessed May 14, 2014, 5. http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf, 5).

3   Rich, *Odds Against Tomorrow*, 254.

4   See also Gabrys, Jennifer, and Kathryn Yusoff, "Arts, Sciences and Climate Change: Practices and Politics at the Threshold," *Science as Culture* 21.1 (2012): 17.

institutional sites."[5] Countering this tendency, there is a need for other means of representation of this unprecedented global crisis. Authors and artists alike provide creative works that serve as alternative communications of environmental problems and risks, and thereby provide valuable insights on formerly neglected aspects of this crisis.

The imaginative realm—and most importantly for this article, literature—thus plays a vital role in the climate change debate by translating hypothetical situations so that the reader can emotionally relate to and critically reflect upon them. As Sylvia Mayer has pointed out,

> texts [...] direct our perception, they suggest categories of interpretation and evaluation, they function as premises for subject and identity formation, for the creation of ethical systems, and for the establishment of laws that in turn regulate social and economic practices.[6]

In this sense, cultural artefacts are not only aesthetically but also politically relevant. Furthermore, by illustrating the connection between a possibly disastrous future and our present actions, they engage in a "poetics of responsibility"—that is, in a debate about the responsibility that we as humans have towards our own actions.[7] Even though some of the literary scenarios may be apocalyptic, it is not the end of the planet that is portrayed, but rather the end of our Westernised lifestyles that centre on unbounded growth and consumption. But destruction is never complete in these worst-case scenarios. Instead, the dystopian stories seem to function as moments of "involuntary enlightenment",[8] or moments of realisation, aiming to ignite action in order to avert crisis, since, as Greg Garrard pointedly explains, "only if we imagine that the planet has a future, after all, are we likely to take responsibility for it."[9]

Reading climate change novels not only within their aesthetic realm but also for their contribution to, and critical intervention in, climate risk

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5   Luke, Timothy W., *Ecocritique: Contesting the Politics of Nature, Economy, and Culture* (Minneapolis: University of Minnesota Press, 1997), 91.

6   Mayer, Sylvia, "Literary Studies, Ecofeminism, and the Relevance of Environmentalist Knowledge Production in the Humanities," in *Nature in Literary and Cultural Studies: Transatlantic Conversations on Ecocriticism*, ed. Catrin Gersdorf and Sylvia Mayer (New York: Rodopi, 2006), 112.

7   Heise, Ursula, "Teaching Ecocritical Theory," in *Teaching North American Environmental Literature*, ed. Laird Christensen (New York: MLA, 2008), 53.

8   Ulrich Beck in Amsler, Sarah, "Bringing Hope to Crisis," in *Future Ethics: Climate Change and Apocalyptic Imagination*, ed. Stefan Skrimshire (London: Continuum, 2010), 135.

9   Garrard, Greg, *Ecocriticism* (London, New York: Routledge, 2004), 107.

communication, their authors could be considered artistic whistle-blowers in and on a society that increasingly "dwells in crisis".[10] Whereas doomsayers once

> sought to reveal awful truths to ignorant people and urged immediate action to avoid disaster, now voices [whistle-blowers] need to ask people to acknowledge what they already suspect and what their society, even when denying environmental crisis, is still preoccupied with.[11]

The authors thereby question our prior understanding of right or wrong predictions, of apocalypse or paradise, and challenge society's complacent acceptance of crisis. As writers become increasingly aware of a world at risk, they critically engage with humanity's position within this network of changing ecologies. Climate change fiction thus provides the cultural space to participate both in the communication and the mitigation of this complex, unparalleled environmental crisis.

The importance of cultural narratives for the communication of climate change has, however, for a long time been neglected and is only recently starting to be discussed.[12] The historically entrenched division of nature and culture and its concomitant justification of a human dominion over nature have so far determined who possesses the legitimate power to address issues related to nature.[13] Consequently, this narrow authority has ensured the long-lasting dominance of scientific factuality in environmental and thus also climate change discourses.

2 Re-imagining Science and Climate Change

In his inaugural address, the 44th President of the United States, Barack Obama, proclaimed that his administration would restore science to its rightful

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10   Buell, Frederick, *From Apocalypse to Way of Life: Environmental Crisis in the American Century* (New York: Routledge, 2004), 173. He has most notably described a society which gets accustomed to increasing environmental threats but nevertheless 'dwells in this state of crisis'.

11   Ibid., 202.

12   In his latest introduction to literature and the environment, Timothy Clark still laments the absence of a literary criticism which directly addresses the issue of climate change in interpreting literature and culture. However, he also acknowledges that this is largely due to the novelty, scope and scale of the problem. See Clark, Timothy, *The Cambridge Introduction to Literature and the Environment* (Cambridge University Press, 2011), 11.

13   This division was most notably emphasised by Descartes' ideas on mind/body dualism.

place.[14] Referring to his predecessor's widespread discrediting of the scientific community, Obama's statement also affirmed an acceptance of the climate change science that Bush's administration so ferociously disputed. Furthermore, as Daniel Sarewitz has convincingly argued, in times of environmental crisis, policymakers tend to call for more scientific research because of the belief "that by introducing science, and the objective information that science can produce, into an environmental controversy, rational policy solutions will be facilitated."[15] He continues to explain that this "mental model of how science can contribute to environmental policy-making is consistent with the norms of a culture that places great faith in science and the rationality that science can deliver."[16] However, rather than producing absolute truths, scientific research often raises more questions as well as a confusingly wide variety of scientific data. Sarewitz then points to some key obstacles that impede a closer intersection between science and politics—above all, that science and politics have different goals and working hypotheses. While politics in Western democracies aims to form a consensus for action based on a preceding democratic debate, science engages in a process of continuous questioning and hypothesising that may be contrary to reaching a consensus. Furthermore, the kind of 'nature' that science is trying to investigate—and for that matter environmental problems today—are together so complex and multifaceted that it is almost impossible to arrive at any absolute certainty about it. Politics cannot derive clear-cut answers for policy decisions from science because the complexity of scientific data can support any kind of decision making. All of these factors lead Sarewitz to the conclusion that instead of a lack of objectivity, we are actually suffering from an excess of it. Thus we need to acknowledge that there is no 'right' or 'wrong' scientific statement, but that the 'truth' in the resolution of an environmental problem lies within the negotiation of a spectrum of positions.[17]

Nevertheless, the central battleground around which discussions of climate change have evolved has addressed the accuracy of science and the assertion that the climate science is settled. While the Intergovernmental Panel on Climate Change (IPCC) states in its 2007 Synthesis Report that "the warming of

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14   Obama, Barack, "Inaugural Address," (Washington, D.C., January 20, 2009), accessed February 27, 2012. http://www.whitehouse.gov/blog/inaugural-address.

15   Sarewitz, Daniel, "Science and Environmental Policy: An Excess of Objectivity," in *Earth Matters*, ed. Robert Frodeman (Upper Saddle River, NJ: Prentice Hall, 2000), 81.

16   Sarewitz, "Science and Environmental Policy," 83.

17   Ibid., 90.

the climate system is unequivocal",[18] it refrains from using any wording that implies absolute certainty throughout the entire paper. In order to make knowledge claims, the IPCC uses a variety of epistemic modifiers such as very likely (>90 per cent), unlikely (<33 per cent), high/medium confidence etc.[19] This loophole of uncertainty has been extremely frustrating for climate change activists and politicians alike because it has directed the general discussion about global warming towards the accuracy of data rather than the meanings and consequences derived from those findings. In contrast, this focus on science has helped climate change denialists promote their own political agendas by declaring that as long as the science was not settled—i.e. facts presented with 100 percent certainty—there was no reason to reduce anthropogenic greenhouse gas emissions. Hence, powerful anti-climate change lobbies managed to produce an image of a scientific controversy where one does not truly exist, emphasising uncertainty and calling for ever more research.[20]

The emphasis on the accuracy of scientific data in climate change discourse is enforced by the prevailing representation of climate change through graphs and simulations. This visualisation through abstraction, however, makes these expert images epistemologically fragile, especially when they are used outside the *viscourse*—the scientific visual discourse.[21] The so-called 'hockey stick' graph, which portrays the rise in global average temperature, is the iconic image in climate change discussions, and it predominates many people's conception and very idea of global warming. And even though the knowledge claims that science is offering through this graph and other simulations—particularly the peak at the end of the timeline—are raising concerns about the future, this particular kind of visualisation also enforces a division between the scientific and the human realm: increased levels of data and abstraction coupled with the lack of a representational means of seeing ourselves as actors within these data. The statistical grid work of diagrams and signs has, according to Ralf Konersmann, banned other perceptions (symbolic, aesthetic, mythological,

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18   Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Synthesis Report* (Geneva: IPCC, 2007), 30.

19   For a strong analysis of the linguistic elements and techniques that are used to express polyphony and (un)certainty in climate change documents see Flottum, Kjersti, "A Linguistic and Discursive View on Climate Change Discourse," *Anglais de spécialité* 58 (2010): 19–37.

20   See Boykoff, Maxwell T., and Jules Boykoff, "Balance as Bias: Global Warming and the US Prestige Press," *Global Environmental Change* 14.2 (2004): 125–136.

21   See Schneider, Birgit, "Ein Darstellungsproblem klimatischen Wandels? Zur Analyse und Kritik wissenschaftlicher Expertenbilder und ihren Grenzen," *Kritische Berichte* 3 (2010), 83.

metaphysical) of climate.[22] Hence our very understanding and experience of climate change has been shaped by that all-encompassing scientific interpretation of the weather.

One important category in these statistical and graphic representations of climate change are the so-called emission scenarios that calculate future data—a practice which, not surprisingly, spurs the climate change denialists' debate because it involves an even higher factor of uncertainty.[23] Combining biophysical models with assumed social and political trends, these scenarios are commonly defined as "plausible, challenging and relevant stories about how the future might unfold."[24] As such, they provide important empirical data on the possible greenhouse gas trends for the future. However, scientists themselves constantly explain that—contrary to the public's assumption—they cannot predict the climatically changed future; they can only model scenarios which may help to think about a variety of possible futures. As climatologists furthermore point out,

> climate models are our crystal balls to get a glimpse of the future, an age-old dream of humanity. But what they offer is not a prediction—rather, it comes as a bundle of scenarios [...]. Natural scientists can in principle

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22   Konersmann, Ralf, "Unbehagen der Natur. Veränderungen des Klimas und der Klimasemantik" in 2°. *Das Wetter, der Mensch und sein Klima*, ed. Thomas Macho and Petra Lutz (Göttingen: Wallstein, 2008), 32.

23   The SRES (Special Report on Global Emissions Scenarios) scenarios represent the most prominent future simulations in climate change research. They were published by the Intergovernmental Panel on Climate Change (IPCC), *Emission Scenarios: Summary for Policy Makers. Special Report* (Geneva: IPPC, 2000), and consist of forty different scenarios projecting future greenhouse gas emissions based on different underlying storylines (driving forces). The storylines vary according to economic development, technical advance, land use, political situation (global or local actions), population growth etc.

24   Pulver, Simone, and Stacy VanDeever, "Thinking About Tomorrows: Scenarios, Global Environmental Politics, and Social Science Scholarship," *Global Environmental Politics* 9.2 (May 2009): 1. As the authors elaborate, "futurising" and scenario projection have become increasingly popular tools in environmental politics and science over the past decade, particularly in discourses on climate change. These calculations correspond with an increase of hazardous processes whose consequences will materialise at a later point in time. The environmental preoccupation with the future most notably entered public discourse in the beginning of the 1970s with the following publication: Meadows, Dennis et al., *The Limits to Growth; A Report for the Club of Rome's Project on the Predicament of Mankind* (New York: Universe Pub.,1972). Interesting in this context is the acknowledgment of the invisibility and latency of environmental risks and, at the same time, the focus and dependence on measuring those risks.

not predict the future of climate, because it depends on human actions
[…]. That is a matter of choice, not a pre-determined future that can be
calculated today. What we can do, however, is calculate scenarios in 'what
if' style.[25]

There is a very overt notion of uncertainty and probability in these statements,
which is mainly due to the inclusion of the human factor in the equations. Ul-
timately, neither natural scientists nor anyone else knows exactly

> how such a planetary transformation [as climate change] might affect
> particular places and individuals, therefore, [imagining it] amounts to a
> paradigmatic exercise in 'secondhand nonexperience,' [*sic*] envisioning a
> kind of change that has not occurred before.[26]

An overtly prognostic dimension is thus inherent in scientific texts. Even
though hypothesis is a very valuable approach in forming these scientific sce-
narios, because it allows a reflection on what kind of futures may be possible
and desirable or not, these scenarios work under a problematic premise. Birgit
Schneider pointedly explains this controversial status:

> [In climate scenarios,] the probable takes on a fictional status since prob-
> ability theory constructs coherent worlds based on explicitly imaginary
> premises […] In public discussions, however, scenarios are challenged by
> the problem that it is unusual to think about the future in terms of sce-
> narios. Instead, there is the tendency to confuse these fictions with real-
> ity. The great task concerning climate change, then, is to nevertheless
> take the geological anticipations, so ultimately the fictions, seriously
> even though nobody really knows what the future will look like.[27]

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25   Archer, David, and Stefan Rahmstorf, *The Climate Crisis: An Introductory Guide to Climate
      Change*, (Cambridge University Press, 2009), 126.

26   Heise, Ursula, *Sense of Place and Sense of Planet: The Environmental Imagination of the
      Global* (Oxford , New York: Oxford University Press, 2008), 206. See also my elaborations
      on the imagination of the global in literary representations of climate change: Mehnert,
      Antonia, "Climate Change Futures and the Imagination of the Global in *Maeva!* by Dirk C.
      Fleck," *Ecozon@* 3.2 (2012): 27–41.

27   Schneider, "Darstellungsproblem," 86, emphasis added, my translation. The original
      reads: "Jedoch hat das Wahrscheinliche den Status des Fiktionalen, weil die Theorie der
      Wahrscheinlichkeit "eine kohärente Welt auf der Grundlage ausdrücklich imaginärer
      Prämissen" konstruiert […] In der Diskussion der breiten Öffentlichkeit jedoch stoßen
      derartige Grafiken auf das Problem, dass es ungewohnt ist, über die Zukunft in Form von

While these scenarios aim at facilitating an intervention and at giving plausible insights on what the future could look like, they are caught within a system of assumptions particular to their discipline. The fictions developed are then discussed in terms of their truthfulness, and are thus contested even though their importance lies in the seriousness of these fictional realities.

It seems that due to problems of credibility and abstraction, simulations by climatologists have so far not successfully illustrated the problem in a way that could be grasped by the general population and translated into everyday life. How do you make something as global, abstract, and associated with such a long-term perspective as climate change experienceable, when people usually only perceive their own daily weather changes? How do you portray slow incremental change? Is it even possible to transport the message through statistics-baseds illustrations? So far it seems that instead of calling for action, the complexity of the issue and its discussion almost solely in scientific terms, as well as the great variety of possible scenarios, have only led to an intricate network of confusion and uncertainty.

This is a question of describing climate change not only in terms of its transformations of the terrestrial system, nor solely as an abstractly modelled phenomenon, but also as the object of projection for all kinds of socio-political projects, in the context of the various meanings that are ascribed to it.[28] Instead of causing more confusion, climate change may then also serve as a point of crystallisation: an assumed nodal point in history, in which climate change acts as a magnifying glass for the long-term implications of our short-term choices, and as a mirror to reconsider what we really want to achieve for ourselves.[29] Thus, in order to understand global warming, we should not only consider its scientific explanations; we also need to consider it within a broader

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Szenarien nachzudenken. Stattdessen gibt es die Tendenz, die Fiktionen mit Realität zu verwechseln. Die große Herausforderung beim Problemfeld des Klimawandels ist, dass es gilt die erdgeschichtlichen Antizipationen—dies heißt jedoch letztlich die Fiktionen—der möglichen Zukünfte ernst zu nehmen, auch wenn niemand wissen kann, wie der Wandel genau aussehen wird."

28   See also Mike Hulme's distinction in *Why We Disagree About Climate Change: Understanding Controversy, Inaction and Opportunity* (New York: Cambridge University Press, 2009) between "climate change" and "Climate Change", the former representing the physical phenomenon and the latter referring to the assumptions and ideologies attached to it. In his analysis he then goes on to elaborate on four underlying myths which, according to him, dominate climate change discourse. These include: lamenting Eden, presaging apocalypse, constructing Babel and celebrating jubilee.

29   Hulme, *Why We Disagree*, xxiii.

context of discourses and narratives, which implies an awareness of the social and cultural spheres through which climatic changes are brought to the fore.

3 Literature and Climate Change

In 2005 Robert Macfarlane, writer and literary critic, asked "The Burning Question" in the culture section of *The Guardian*: "Where are the novels, the plays, the poems, the songs, the libretti, of this massive contemporary anxiety?"[30] Throughout the article he further laments the absence of cultural works engaged in this "most severe problem faced by the world" and proclaims that the so far prevalent bulk of "invisible literature"—a term coined by J.G. Ballard which summarises "the data buried in company reports, specialist journals, technical manuals, newsletters, market research reports, internal memoranda"[31]—is not enough to communicate the most pressing issue of our times, and needs to be supplemented by cultural imaginaries. This imaginary repertoire is essential to the project of communicating the magnitude of climate change, evoking emotions about it and igniting a debate over actions against its devastating effects. Indeed, authors, filmmakers and artists alike have for a long time been affected by the 'crisis of the imagination' induced by climate change, and have only recently started to find ways to grapple with this issue. While there are several prominent non-fiction works that deal explicitly with anthropogenic climate change—such as Tim Flannery's *The Weather Makers*, James Hansen's *Storms of my Grandchildren*, and notably Al Gore's prominent documentary *An Inconvenient Truth* which was the first work of art to raise such a wide public awareness for the issue—there still is a dearth of fictional (more specifically 'canonical') texts or films (apart from the blockbuster *The Day After Tomorrow*) that engage with anthropogenic climate change overtly and in a straightforward manner.

Though there is an argument to be made that numerous literary works as well as films engage with phenomena related to global warming (i.e. floods, rising sea levels, desert lands), climate change is often employed only as a setting against which the plot of the novel develops, as in Paolo Bacigalupi's celebrated *The Windup Girl*, Cormac McCarthy's *The Road* or Jennifer Egan's *A Visit from the Goon Squad*. While these works and a variety of others may be

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30   Macfarlane, Robert, "The Burning Question," *The Guardian*, September 24, 2005, accessed March 26, 2012. http://www.guardian.co.uk/books/2005/sep/24/featuresreviews.guard ianreview29.

31   Ibid.

interpreted as part of climate change literature, they differ from other literary texts that fully engage with the issue (and were in part chosen for this article) because in these latter texts, climate change significantly alters and is a prevalent issue for characters, plot and setting alike.[32] Climate change fiction fitting the more narrow definition has yet to make it onto bestseller lists (Ian McEwan's *Solar* and Michael Crichton's *State of Fear* being prominent exceptions). However, there are several fairly recently published works that are of importance for their contribution to the imaginary realm of future scenarios of climate change. In this context it is worth looking beyond generic definitions and presupposed categorisations of 'high' and 'low' literature, as climate change risk scenarios do not only influence the content but also transform the form of the literary realm. Science fiction, thriller, novel, scientific scenario, risk scenario, environmentalist pamphlet—all these categories begin to blur and converge in climate change fictions.[33] In the challenging quest for means of representing climate change, new hybridised forms of the novel may then emerge as the medium best suited to engage with this gradual, individual yet (at the same time) global phenomenon. In a US-American context, this becomes most obvious when one looks at climate fiction works such as Kim Stanley Robinson's *Science in the Capital Trilogy*,[34] T.C. Boyles's *A Friend of the Earth,* Barbara Kingsolver's *Flight Behavior*, or Steven Amsterdam's *Things We didn't See Coming*.

Analysing these contemporary novels and reading them as cultural-political attempts to grapple not only with the future outcomes of global warming but also with the narrative challenges of dealing with such an unprecedented phenomenon such as climate change provides new perspectives and, as such,

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32   For a thorough and extensive overview of climate change (in its various interpretations) in Anglophone literature, see Trexler, Adam, and Adeline Johns-Putra, "Climate Change in Literature and Literary Criticism," *Wiley Interdisciplinary Reviews: Climate Change* 2 (2011): 185–200. For the purpose of orienting this article toward the national focus of this volume, I have limited my discussion here to mainly US-American novels, although there are several novels from other national (mainly Anglophone, though) contexts, which powerfully engage with topic of climate change.

33   The term "cli-fi", coined and being promoted most prominently by PR expert, Dan Bloom, is increasingly being used in online articles and fora in order to describe the growing number of films and books dealing with climate change. While "cli-fi" bears a reductive connotation because of its close phonetic resemblance with sci-fi, it has helped to draw attention to the importance of cultural means of portraying climate change. Yet, even if it can be called a new genre, it still remains to be discussed.

34   Robinson, Kim Stanley, *Forty Signs of Rain* (New York: Bantam, 2005); *Fifty Degrees Below* (New York: Bantam, 2007); *Sixty Days and Counting* (New York: Bantam, 2007).

valuable contributions to the discussions evolving around global warming. The narratives not only pose a "threat to received notions of the self, nature and culture"; they also

> might force us to develop alternatives [...] to established ways of presenting and containing environmental crisis. These would have to cope with indeterminacy, long timescales, complex problems of agency and responsibility and the postmodern problem of the unseen, unquantifiable cyborg risk.[35]

Grappling with these manifold representational challenges makes the novels particularly interesting for ecocritics and environmentalists alike because by engaging with the cosmopolitan character of climate change, the literary texts ultimately go beyond the dominant environmental elegiac rhetoric and imagine a world in which the return to a former state of pristine and 'untouched' nature will never be possible. [36] This does not mean that literary texts do not advocate mitigation measures for climate change, but they do so acknowledging the hybrid ecologies we are already immersed in. The novels then participate in new and innovative ways in the discussion of environmental risks after "the end of nature".[37] In the following, a brief analysis of two exemplary works of climate change fiction aims to show in depth how these works deal with the representational challenges of climate change. First, I will focus on Boyle's novel *A Friend of the Earth* and the ways in which Boyle draws the necessary cognitive connections between today's crises and future catastrophes, thereby bridging the gap between past, present and future and making environmental time, otherwise so elusive with respect to climate change, visible again. In a

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35 Garrard, *Ecocriticism*, 149. Though Garrard originally refers here to an analysis by Richard Kerridge of the narrative challenges of BSE narratives, the discussed aspects can also very well be applicable to climate change narratives, or more broadly speaking can be considered as characteristics of narratives about postmodern mega hazards.

36 While the term 'cosmopolitan' has been widely discussed in literary and cultural studies, by using it in this context I am drawing on: Hulme, Mike, "Cosmopolitan Climates: Hybridity, Foresight and Meaning," *Theory, Culture & Society* 27.2–3 (May 2010): 267–276. In this essay, he emphasises the hybrid nature of climate change, building on Ulrich Beck's concept of cosmopolitanism and claiming that the cosmopolitan—in the sense of boundary-dissolving—character of climate change challenges the predominant Western binary distinctions of natural–cultural, future–present, global–local. The term "hybrid ecologies" is then used in order to describe nature, acknowledging its dynamics and constant changing but also humans' influence on it.

37 McKibben, Bill, *The End of Nature* (New York: Random House, 2006).

second analysis, I use Kim Stanley Robinson's work to illustrate how authors of literature participate in the communication of risks and uncertainties and the ways in which they conceptualise the endangerment that climate change poses.

3.1   *Re-imagining Time*

> As living beings we *are* time, we live time, we *feel* and *perceive* time; as human beings we *know* and *reckon* time, as members of contemporary Western societies we have *externalised* time, *created it in machine form* and now *relate to this time as a resource* to be sold, allocated and controlled.[38]

One of the crucial challenges of the climate change crisis is to overcome the conflict between our short-term perspectives and the resulting long-term environmental consequences. But how do we think about something as intangible and invisible as climate change, which does not affect our lives immediately, but rather possibly at some future time?[39] And if we cannot notice the effects, why should we act on them? These questions describe "Giddens's Paradox", or what social psychologists have named "future discounting"—that is, the wide knowledge gap between the familiar preoccupations of everyday life and the abstract future of a climatically changed world.[40] Whereas graphs and statistics may fail to translate this abstract future into individual life stories and to connect actions with impacts, the imaginary realm of literature allows exactly these connections and translations. Jennifer Rose White explains that literature

> can project our understanding and appreciation of invisible, slow, and slowly accelerating crisis into the future in a dramatic way that other forms of discourse lack. They [novels] can also legitimately collapse or

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38   Adam, Barbara, "Re-vision: The Centrality of Time for an Ecological Social Science Perspective," *Risk, Environment, and Modernity: Towards a New Ecology*, ed. Scott Lash (London: Sage Publications, 1996), 92 (sic).

39   In referring to "our lives", I am speaking from a mainly urban European perspective without wanting to neglect the fact that a great part of the world population is already experiencing quite strongly the effects of global warming.

40   Giddens, Anthony, *The Politics of Climate Change* (Cambridge, MA: Polity, 2009), 2.

juxtapose time for maximal impact and understanding in a way that science, biology, and even history cannot.[41]

Unlike temporal representation in scientific diagrams, in which the future indicated on the *x*-axis timeline marks the difference between the present of the reader and his future, climate change fiction deliberately blurs this distinction: past, present and future become inseparably intertwined, thereby illustrating that the risks of tomorrow are already present today. As Mike Hulme also argues:

> Foresight then—the act of seeing ahead—cannot be limited to the overreaching and hegemonic claims of physical prediction. Instead, a cosmopolitan view of climate change will recognise that our future foresight—and hence our future—is as conditioned by the hopes and fears emerging from the present as it is revealed inside the electronics of a computer model. The climate crisis—if indeed there is a crisis—is a crisis of today even if we would rather depict it as a crisis of tomorrow. The future and the present are interacting in new ways as we tell ourselves the story of climate change.[42]

While Hulme's argument is vital for climate change discourse because it reveals that future predictions are never independent of value judgments, it lacks an explanation as to how a re-making of the present-future relationship is in fact told, portrayed and made intelligible.

Moreover, apart from the "technological domestication of time"[43], prominently represented by climate modelling, which is interested in the future for the purpose of controlling it, it seems that contemporary Western societies increasingly focus on the present—a present that is unbound from past or future. Modern technologies, globalisation and ever-faster chains of consumption and production have led to a shortening of time horizons to the extent that "the present seems to be all there is"[44]. In this state of a permanent present

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41   White, Jennifer Rose, "Trouble with Time: Contemporary American Literature and Environmental Crisis" (PhD diss., Columbia University, 2009), 240.

42   Hulme, "Cosmopolitan Climates," 171–2, emphasis added.

43   Simpson, Lorenzo C., *Technology, Time, and the Conversations of Modernity*, (New York: Routledge, 1994), 5.

44   Harvey in Heise, Ursula K., *Chronoschisms: Time, Narrative, and Postmodernism* (Cambridge University Press, 1997), 26.

individuals and society are no longer able to situate past, present and future in logical coherence.[45]

As the focus on the short-term becomes predominant, 'environmental time'[46] is annihilated. However, especially because time has become the "invisible 'other' that works outside and beyond the reach of our senses", we need to rethink the environment in terms of time or as a timescape—and not as often done in environmental discourse solely in terms of place—in order to "see the hazards of an industrial way of life. The invisible [thereby] becomes tangible and we begin to recognise processes that work below the surface until they materialise as symptoms—sometime, somewhere."[47] Particularly in the case of climate change, which is so difficult to perceive because of its latency, a more profound engagement with time may open up new perspectives on environmental temporalities, thereby bridging the historical disconnect.

Literature proves to be a very suitable realm in which to explore how timescapes are rendered visible. Climate change fiction, especially, faces the challenge of negotiating between the short and the long term, of creating narrative relationships between present and future, and between human and environment, while exposing the potential dangers that a bifurcation of time otherwise harbours. In the following discussion, a close analysis of the representations of time and temporal narrative techniques in climate change fiction—exemplified in Boyle's novel in this article—will serve to illustrate the telling of environmental time.

The opening of *A Friend of the Earth* takes the reader to the year 2025. Climate change has significantly altered living conditions in California: vineyards have been transformed into rice paddies, and since "nobody's insured for weather anymore",[48] constant rain, strong winds and hail storms, followed by extreme heat waves, have left people homeless in "Santa Barbara County", "Los Andiegoles" and "San Jose Francisco". With the collapse of the biosphere, many animal and plant species are extinct and humans live with the constant threat of yet another deadly epidemic. In this dystopian setting, 75-year old Ty Tierwater, former radical environmentalist, works as an "animal-man", caring for

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45   See Jameson, Fredric, *Postmodernism, or, The Cultural Logic of Late Capitalism* (Duke University Press, 1990), 25.

46   Barbara Adam defines environmental time as "latency and immanence, pace and intensity, contingency and context dependence, time-distanciation and intergenerational impacts, rhythmicity and timescales of change, timing and tempo, transience and transcendence, irreversibility and indeterminacy" in *Timescapes of Modernity: The Environment and Invisible Hazards*, (London, New York: Routledge, 1998), 55.

47   Adam, *Timescapes*, 1.

48   Boyle, T.C., *A Friend of the Earth* (London: Bloomsbury, 2004), 2.

the private zoo of one-hit wonder rock star, Mac, who considers it a "selfless", "cool" and "brave" task to save those animals that nobody else would have cared for.[49] While the story starts out in the year 2025, the novel ultimately delineates two narrative chronologies which must be mapped out separately in order to discuss more in depth how environmental time is made visible structurally. While one storyline follows the events from 2025 till 2026 as related to the reader by an autodiegetic narrator, Ty, it is alternated by a heterodiegetic narration, which describes Ty's radicalisation as an environmental activist as well as the series of events that build up to his daughter's death from the years 1989 to 1997.

Though the length of the chapters taking place around 2025 compared to chapters taking place after 1989 is fairly balanced, the narrated time of the past (*histoire*) is longer than the story in the future. A great part of the narrative in the future is used to describe California after "everything was poached and encroached out of existence";[50] however, the focus of the novel seems to be how past events have led to this state of devastation. Looking back to July 1989, to "the beginning, the real beginning, of everything to come"[51] and then to the following eight years, the novel describes with an ironic tone the various environmentalists' failures to impede ecological catastrophe. However, as Kerridge explains, the irony used here is not "to discredit the environmentalists but merely emphasises their powerlessness"[52] in a surrounding in which their protest is not heard. The novel's emphasis on the past then serves a double purpose: on the one hand, the narrative reconstructs historical coherence in a world which increasingly focuses on the present, and on the other hand functions as a way to preserve memories, knowledge and stories; though the characters' protest may not be heard, the novel becomes the medium to nevertheless make their claims public.

In challenging the loss of perspective, which impedes us to consider the relation between the short-term decision-making and long-term environmental consequences, the novel aims to re-forge this connection, however painful it may be. As Ty explains,

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49   Boyle, *A Friend*, 11.

50   Ibid., 7.

51   Ibid., 24.

52   Kerridge, Richard, "Narratives of Resignation: Environmentalism in Recent Fiction," in *The Environmental Tradition in English Literature*, ed. J. Parham (Aldershot: Ashgate, 2002), 90.

> I try to avoid perspective as much as possible. Perspective hurts. Live in the present, that's what I say, one step at a time, and forget nostalgia, forget history, forget the sketchy chain of loss, attrition and disappointment that got you into bed last night and out of it this morning.[53]

That the novel counters this culture of forgetting is most prominently demonstrated in the story within the story, hence with the book that journalist and activist April Wind is writing about Sierra Tierwater, Ty's daughter and an environmental activist, who, during a tree-sitting protest, accidentally slips from the tree and falls to her death. In the beginning, Ty is not convinced of the purpose of such a book for "posterity",[54] since this posterity is a world "turned to shit" with "people who know no more about animals—or nature, or the world that used to be—than their computer screens want them to know";[55] but once he holds the text in his hands, he appreciates "the crisp sound of paper, the printout, the stuff of knowledge as it used to be before you could plug it in".[56] Sierra's biography becomes a way of challenging the overwhelming cultural amnesia of a society in which people are considered historians if they can remember what happened 20 years ago, foregrounding and critically reflecting on the relationship between human and environment. Sierra's story takes on such an importance that even the narrative pattern of the novel is interrupted. As past events reach their climax, they are also re-claiming their space in the present, interfering with the otherwise clear-cut narrative which distinguishes between past and future in its chapter arrangement. Thus in Ty's first-person narration, memories of Sierra's tree protest emerge and the reader learns the truth about what has been foreshadowed throughout the entire novel. As the past invariably becomes part of the future and the temporal distance is thereby collapsed, it is even further highlighted that environmental destruction is a result of past actions; in the narration, Sierra's environmentalist defeat is then immediately paralleled to a world of colourless forests where wilt and decay predominate the scenery. At the same time, Ty's personal loss is equalled to the loss of biodiversity.

While often in environmentalist rhetoric the past is drawn upon as part of an elegiac mourning for what 'great nature' has been lost, this notion is complicated in *A Friend of the Earth*. Though Ty falls back into lamenting that there is nothing he really wants "except the world the way it was" with his daughter,

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53   Boyle, *A Friend*, 111.

54   Ibid., 16.

55   Ibid., 7.

56   Ibid., 226.

parents, and first wife still alive, but also with the "doomed and extinguished wildlife […] put back in their places", the account of his past shows that none of the environmental strategies succeeded to prevent this destruction from happening—and, ironically, the very nature that the characters are trying to save is the cause of their deaths.[57] Thus Mac is killed by the lions he is trying to save, Sierra falls from the tree she wanted to prevent from being felled, and Teo, "environmental superman"[58] and lover of Ty's third wife Andrea, is struck by a meteor. Kerridge argues, furthermore "the novel looks back not at a cause narrowly defeated but at one that was always going to be lost".[59] As not even environmentalists can free themselves from the capitalist culture that shapes them nor from personal motives, the environmental cause that they are pursuing is also weakened. In the end, looking at the devastation in 2026, even Ty has to admit that after years of ecotage and as a "human hyena"[60]—a nickname that was given to him after he almost poisoned the fresh water reservoir of Santa Barbara—he has accomplished nothing, "absolutely nothing".[61] The novel ultimately demonstrates then that environmental protest will not lead to achievements if it is not heard and supported by the rest of society. Though dystopian and accusative of humans' role in the destruction of the biosphere, Boyle's work rejects falling into a lamenting of a lost static and romanticised nature. Instead, past and future events illustrate that nature has agency in the transformation of the world. Also in a world in which "global warming has become the consequence"[62] and life on earth may no longer be what it used to be, nature nevertheless prevails: "the woods […] are coming back, the shoots of the new trees rising up out of the graveyard of the old."[63] Even humans will survive, but as Ty's final affirmation "and I'm a human being" in a post-pastoral notion seems to suggest, they have become one species among many, not one that assumes superiority.[64]

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57   Boyle, *A Friend*, 260.

58   Mayer, Sylvia, "American Environmentalism and Encounters with the Abject: T. Coraghessan Boyle's *A Friend of the Earth*," in *The Abject of Desire: The Aestheticization of the Unaesthetic in Contemporary Literature and Culture,* ed. Konstanze Kutzbach and Monika Mueller (Amsterdam: Rodopi, 2007), 228.

59   Kerridge, Richard, "Narratives of Resignation," 88.

60   Boyle, *A Friend*, 218.

61   Boyle, *A Friend*, 270.

62   Ibid., 185.

63   Ibid., 274.

64   The term post-pastoral has been coined by Terry Gifford in his work *Pastoral* (London: Routledge, 1999) to describe writings that value nature also in its destructive aspects and take responsibility for it, though not out of false idealism.

Through the contraction (using analepsis and prolepsis) and partial collapse of time by structurally blurring past and future, Boyle's novel permits a "'timescape perspective', in which the timespans of ordinary life, onto which we map our personal hopes and plans, are viewed alongside drastically longer and shorter distances."[65] In the case of global warming, especially, where change does not register immediately and thus often eludes human perception, an explicit focus on timescapes allows the reader to notice the otherwise imperceptible. Following the life of one particular character allows one to relate to the emotional and personal contours that future consequences of climate change may have.

Even though Boyle clearly demarcates the future—not only through the description of setting and characters, but also through temporal markers (for example chapter headings)—he also employs several techniques in the narration to make the reader part of that future. Firstly, the timeframe chosen, 2025, is not a very distant future from the standpoint of a novel published in 2000, but more importantly this temporal distance is interrupted on several occasions when Ty directly addresses the reader. Breaching out of the future narrative framework, he relates to the reader of the present:

> And just like you—if you live in the Western world, and I have to assume you do, or how else would you be reading this?—I caused approximately two hundred fifty times the damage to the environment of this tattered, bleeding planet.[66]

Ty's account then takes on a storytelling character, as the listener/reader is immediately drawn into the world of the narrator, which becomes the continuation of the present and allows critical reflection about what kind of a future could have been avoided.

The novel maps the relation between short-term and long-term not only through its narrative structure, but also on the level of content. It thereby demonstrates that environmental crisis is the result of a conflict between the dynamics of environmental time and human-cultural time.[67] In fact, human time is rendered atemporal in the future of *A Friend of the Earth*, that is, indifferent to environmental processes and changes. In 2025, seasons no longer

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65   Richard Kerridge, in his elaboration on environmental narratives in "Ecothrillers: Environmental Cliffhangers," in *The Green Studies Reader*, ed. Laurence Coupe (London: Routledge, 2000), 243.

66   Boyle, *A Friend*, 43.

67   See also White, "Environmental Time."

exist in California and an ever-present "black sky"[68] makes it difficult to distinguish between day and night-time. Many species are extinct and irregular weather patterns have made farming impossible. Thus with meat or other fresh produce no longer available, human diet has been extremely altered and relies on non-natural food production. Rats are the only thriving species, "multiplying like there's no tomorrow (but of course there is, as everybody alive now knows all too well and ruefully, and tomorrow is coming for the rats too)."[69] As birth rates decline and society ages rapidly, there are attempts to make the human body timeless: organs can be regrown, signs of age are hidden by plastic surgery and a distinction between nuances of young (young-young, young, young-old, etc.) has made exact age obsolete. Yet, instead of considering this development as medical progress, Ty observes, "we could live another twenty-five or fifty years even. The thought depresses me. What is going to be left by then?"[70] The control over the temporality of a lifetime then is worth nothing if ultimately the disastrous present is all there is and the future only becomes a worsening continuation thereof. In this context, posterity becomes an empty signifier, a word without meaning, most prominently illustrated in the death of Sierra—the daughter who dies before her father.

The novel ultimately illustrates the dangers of solely focusing on short-term-oriented human time, tracing the life of one individual and the ways in which it is dramatically affected and constituted by his environment. The narrative frame then allows for a dialectic between short-term human perspectives and long-term environmental consequences, which is key for the reader to identify otherwise elusive, invisible and long-scale environmental hazards. To focus on the reading of time in climate change fiction, and more precisely on how geological timescales can be related to individual and human timescales, thus helps illustrate the ways in which literature participates in climate change communication and attempts to make this phenomenon graspable.

3.2   *Environmental Risks in an Age of Security*

As scholars such as Ursula Heise or Susan Mizruchi have most notably shown, literature is part of an important imaginative realm that participates in the communication of risks.[71] Its importance lies not only in the selection of what

68   Boyle, *A Friend*, 2.

69   Ibid., 6.

70   Ibid., 260.

71   See Heise, Ursula, "Toxins, Drugs, and Global Systems: Risk and Narrative in the Contemporary Novel," *American Literature* 74.4 (2002): 747–778. See also Mizruchi, S., "Risk Theory and the Contemporary American Novel," *American Literary History* 22.1 (December 2009):

kind of risks need to be contemplated, but especially in the ways in which information about certain risks is put into an intelligible narrative pattern, pointing to possible causes and consequences, defining actors and victims, portraying affected places and reconstructing historical coherence, thereby making the invisible visible again. Furthermore, as Mizruchi has explained,

> provisional, often ineffable, as beholden to ethical and affective considerations as it is to scientific ones, the phenomenon of risk seems especially suited to fictional representation. Fictions dramatize vividly in terms that force us to think, as well as to feel, that the extent to which humans control their destinies is often the extent of their capacity for destruction.[72]

Fictional representations of risk have the capacity to stimulate affect—which is essential to conveying a phenomenon such as climate change that so far has remained very abstract for the general public—and to encourage critical reflection about our role in the production of risks.[73]

Most climate change novels present a dystopian, though not necessarily apocalyptic, vision of the future. Conferring with Mizrushi's indication that "modern history is the source of the narrative of risk",[74] these texts respond to our current dwelling in crisis. As Frederic Buell discusses in *From Apocalypse to Way of Life*, environmental crisis has become a normal feature of everyday life. While the 20th century still experienced a rise of apocalyptic environmental rhetoric, rupture and revelation no longer work in a world in which complex processes pose constant threats to society. Danger appears to be all around us, and "instead of being haunted by a sudden world-end [...,] we more

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109–135. Though these two literary scholars refer to several approaches in risk theory, I am relying here on the notion of risk elaborated on by sociologist Ulrich Beck who describes the transformation of modern industrial society into a risk society. This risk society finds itself endangered by the self-inflicted hazards of its own modernisation—a development that Beck and others call reflexive modernisation (Beck, *Risk Society,* 14).

72   Mizruchi, "Risk Theory," 119.

73   As already analysed in detail by scholars like Ursula Heise, the dramatisation of (environmental) uncertainty is not limited to climate change fiction. The well-known 'risk' classic *White Noise* by Don DeLillo proves a case in point, but also numerous other writers such as Richard Powers or Ana Castillo have dealt with the issue of possible exposure to toxic chemicals and pesticides in their works. Also the dangers of radioactivity find prominent resonance in risk narratives such as Christa Wolf's novel *Störfall: Nachrichten eines Tages* or Michael Madsen's documentary *Into Eternity*.

74   Ibid., 129.

realistically worry about a world that doesn't end, but which descends and further descends."[75] This aspect is also illustrated in the previous analysis of Boyle's novel. Thus the future will bring no end of the world, not even of humanity, but an increase of the environmental threats that are already present today. Even though some climate change novels present wide-ranging disasters and in doing so may employ apocalyptic rhetoric, I argue that they predominantly engage with worlds at risk, which are in a process of becoming and not already finished or determined to end.[76] As these novels contemplate the role of the human in the extremely altered worlds of climate change, they nevertheless engage in the question of how this catastrophe can be mitigated. Many climate change novels could thus be characterised as critical dystopias. Moylan and Baccolini explain that "critical dystopias allow both readers and protagonists to hope by resisting closure: the ambiguous, open endings of these novels maintain the utopian impulse within the work."[77] Unlike the usual dystopia, which ends on a clearly pessimistic tone, the open-endedness and emphasis on uncertainty in the climate change novel then leaves room for hope and change.

As explained in the foregoing short introduction to literature and climate change, the relatively small corpus of climate fiction works indicates that it nevertheless remains difficult to portray the risks which climate change poses. One of the problems then may also be that a non-apocalyptic version of climate change is exceedingly hard to render as a compelling narrative. For instance, a near future world in which a huge part of the population is killed by an enormous tidal wave (as in *The Day After Tomorrow*) is more likely to be portrayed than a tracing of the very slow and gradually elevating salinity of the oceans. Of course, readers'/viewers' expectations and interest in the issue also play a role here. In an interview, science fiction author Kim Stanley Robinson explained that although he had been interested in the topic of global warming for some time, he has had difficulty writing about it—until he heard of abrupt climate change. Engaging with this phenomenon, which takes place at a future point when the otherwise slow and gradual climate regime is pushed over a threshold, resulting in sudden major changes, allowed him to circumvent the

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75   Beck in Buell, *Apocalypse*, 29.

76   In her insightful chapter on narratives and risk in *Sense of Place and Sense of Planet*, Ursula Heise argues that ultimately, apocalyptic narrative is one form of risk perception, and is therefore not completely opposed.

77   Baccolini, Raffaela, and Tom Moylan, "Introduction. Dystopia and Histories," in *Dark Horizons: Science Fiction and the Utopian Imagination* (New York: Routledge, 2003),7.

problem of the portrayal of long timescapes in his latest *Science in the Capital* trilogy. As literary scholar Adeline Johns-Putra has furthermore explained,

> the near-future setting of the Science in the Capital novels enables the imaginative construction of climate change in a way that is psychologically and—one is compelled to add—politically and ideologically relevant.[78]

In contrast to his critically acclaimed *Mars* trilogy, Robinson has repeatedly pointed out in interviews that it was his concern to illustrate that humanity, rather that terraforming a faraway planet, is actively changing the earth system and that, therefore, "we have to learn to think of ourselves as terraforming it on purpose, in order to keep it healthy and save human civilisation."[79] Thus a near future on earth setting seemed necessary to draw the cognitive relations. In his trilogy, Robinson then alludes to two possibilities which could cause abrupt climate change: one is the stall of the Gulf Stream and the other is the breaking up of the West Antarctic Ice Sheet. However, Robinson points out, "how that [abrupt climate change] might begin, no one can be sure".[80] The results are nonetheless disastrous. His first novel *Forty Signs of Rain* introduces a cast of characters and then follows their lives and actions, leading up to a great flood in Washington D.C. The sequel *Fifty Degrees Below* continues the multi-perspective story and describes how the city's inhabitants endure an extremely severe winter. The final novel *Sixty Days and Counting* describes "a moment of history when climate change, the destruction of the natural world, and widespread human misery were combining in a toxic and combustible mix"[81] and the newly elected President, Phil Chase, is trying his best to work his way through the adversaries of weather, politics and economy. Though Robinson's trilogy, like *The Day After Tomorrow*, engages with major climatically induced disasters, it conceptualises the endangerment that climate change poses very

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78 Johns-Putra, Adeline, "Ecocriticism, Genre, and Climate Change: Reading the Utopian Vision of Kim Stanley Robinson's Science in the Capital Trilogy," *English Studies* 91 (November 2010): 745.

79 Robinson, Kim Stanley, "Imagining Abrupt Climate Change," *Amazon Shorts* (2005): 3. Robinson's argument here resonates Crutzen's theory that we have entered the Anthropocene, a new geological epoch shaped by humankind (see also Crutzen, Paul, and Eugen Stoermer, "Have We Entered the Anthropocene?" *International Geosphere Biosphere Program*, October 31 2010, accessed November 28, 2012. http://www.igbp.net/5.d8b4c3c12bf3be638a8000578.html).

80 Robinson, *Forty Signs of Rain*, 225.

81 Ibid., 5.

differently. Already the sheer volume (about 1500 pages) of the trilogy—a "Victorian triple-decker" as Robinson names it—demonstrates that although climatically induced disasters, i.e. the flood, the cold wave, give the trilogy a structure, they do not constitute the climax or sole focus of narration.[82] Instead, the novels focus on the meticulous description of the characters' personal and professional lives and their experience of a world at risk. The trilogy thereby raises interesting questions about uncertainty, engaging the misconceptions of science by the general public, emphasising the importance of the 'precautionary principle', and critically exposing the "commodification of contingency",[83] each of which will be elaborated in the following.

In order to describe how science works and "how it relates to the worlds of power politics, capital, and daily life",[84] the novel follows the daily work routine of several characters who are scientists working at the National Science Foundation in Washington D.C.—most notably Frank Vanderwal, who recently joined the team from California, and Anna Quibler, statistician and mother of two, who in the course of the novel becomes acquainted with the representatives of the embassy of the fictional island of Khembalung which is threatened to be inundated by rising sea levels. Readers gain a very detailed insight on the processes that shape scientific knowledge and the difficulties scientists face in communicating climate risks to the public or politicians. As the work of scientists is more and more demystified, it becomes obvious that although complete certainty for future modelling may never be possible, scientists nevertheless take the risks involved with rising greenhouse gases seriously and thus decide to actively engage in the issue, i.e. to get involved in politics. The change of attitude is most prominently portrayed in the generally rational and cynical character of Frank, who undergoes a transformation after transfixing on one particular sentence from a lecture by the Buddhist Khembalung ambassador: "an excess of reason is itself a form of madness."[85] As he further contemplates this statement, he comes to realise that "reason had never explained the existence of life in this universe"[86] but what is done with knowledge, how one has lived with it and made sense out of it also bears importance. According to Buddhism, practising compassion is essential for humanity's

82   Robinson, "Abrupt Climate Change," 16

83   Luis Lobo-Guerrero describes in his book *Insuring Security: Biopolitics, Security, and Risk* (New York: Routledge, 2012) the intriguing intersection between economic industry and risk society from which a profitable and powerful insurance sector emerges.

84   Robinson, "Abrupt Climate Change," 16.

85   Robinson, *Forty Signs*, 268.

86   Ibid., 272.

survival. Frank begins to recognise that a paradigm shift is needed, that science had to become part of the political decision making process—even though the thought filled him with fear and anxiety. It serves as a call for action in spite of the uncertainties that this change involves.

The novel furthermore draws parallels between large-scale, invisible and thus hard to grasp climate risks and the personal risks that various characters have to face. Though weather extremes all over the globe are happening with more frequency, events such as the breaking off of the Ross Ice Shelf do not seem to be regarded with enough importance. When Charlie, environmental policy advisor to the presidential candidate and Anna's husband, realises the ramifications of this event—the acceleration of ice flow of the West Antarctic Ice Sheet—he wonders why he would find such important information only on the final pages of a newspaper, but simultaneously proposes an explanation: "People were talking about it the same way they did any other disaster. There did not seem to be any way to register a distinction in response between one coming catastrophe and another."[87] This passage alludes to a society which increasingly domesticates crisis. Though "researchers didn't appear to know" how fast the acceleration of ice flow was, since the "modeling [was] inconclusive", this uncertainty does not affect Charlie's understanding of the related risks.[88] On the contrary, the article gives him a

> sharpened sense that this was serious, and perhaps the tipping point into something worse. All of a sudden it coalesced into a clear vision standing before him, and what he saw frightened him. Twenty percent of humanity lived on the coast. He felt like he had one time driving in winter when he had taken a turn too fast and hit an icy patch he hadn't seen, and the car had detached and he found himself flying forward, free of friction or even gravity, as if sideslipping in reality itself.[89]

Charlie links the risks involved with rising sea levels to a personal experience and by describing his feelings in the event, makes them even more relatable. This correlation effectively counters the disengagement evoked by abstract concepts because, as Frank points out in the novel, the "only things people understand are sensory."[90]

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87   Robinson, *Forty Signs*, 238.

88   Loc. cit.

89   Loc. cit.

90   Frank in *Forty Signs*, 79.

Another passage in the novel, which focuses on Frank, illustrates the difficulties of making decisions when confronted with risks. After a violent encounter with a stranger, Frank suffers from a severe head injury, which both physically and psychologically affects him after a long healing period as he continues to taste blood in the back of his throat every now and then and experiences difficulties in processing decisions. When he finally agrees to see a doctor, he finds out that a subdural hematoma, which exercises pressure on the frontal cortex, and thereby influences the "emotional components of risk assessment and the like",[91] may be the reason for his cognitive problems. Frank needs to decide whether he will pursue risky neurosurgery to drain the hematoma, or continue to live with it, even though "problems in decision-making can be pretty debilitating"[92] for some people:

> Frank sighed. Possibly he could construct an algorithm that would make this decision for him, by indicating the most robust course of action. Some kind of aid. Because it was a decision that he could not avoid; it was his call only. And doing nothing was a decision too. But possibly the wrong one. So he had to decide, he had to consciously decide. Possibly it was the most important decision he had before him right now.[93]

Ultimately, Frank decides to schedule the surgery. Doing nothing when confronted by risks was not an option according to Frank. On the contrary, all the book's characters aim for the precautionary principle, "meaning that you don't delay acting on crucial matters when you have a disaster that might happen, just because you can't be a hundred percent sure that it will happen".[94] Thus risks may be productive when they become an agent for change.

In order to further counter a society which statically dwells in crisis, Robinson juxtaposes the dangers of environmental risks (thus uninsurable risks) to risks which are externalised, managed in agencies, and thus generally accepted as having acquired a rather positive notion because they are related to profit. One of the storylines of the trilogy therefore elaborates on the ways in which contingency is made profitable. During one of Frank's secret meetings with Catherine, who later becomes his girlfriend, he finds out that he's been part of a larger network of people under surveillance. Powerful lobbies have established—though not necessarily legally, "future markets", a potent

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91   Robinson, *Sixty Days*, 186.

92   Ibid., 178.

93   Ibid.

94   Robinson, *Forty Signs*, 160.

computer-simulation program which allows them to bet on people "who may become some kind of a security risk"[95] or whose work will lead them to lucrative innovations. Well-developed technology allows surveillance of phone connections, emails, and credit card purchases, but also of physical locations. Such monitoring capabilities permit the creators of future markets and interested parties to track their suspects' actions into the smallest details. However, this complex "security apparatus" turns out to be life-threatening for Frank and Catherine, as they not only try to undermine the system by 'getting off the radar', but also by exposing the planned election fraud designed by the creators of future markets. This story then complicates pre-supposed notions of security and insurance by demonstrating how risks are also artificially created for power and monetary purposes.[96] It furthermore describes another problem in contemporary society, which Shapiro highlights:

> while fear is an epistemological attentiveness, located in the individual body [...] 'fear' in the contemporary city and nation state evokes a complex dispositif; it is located in an apparatus rather than in single alert bodies.[97]

Relating back to Charlie's comment of not being able to distinguish any longer between one disaster and the next, people in a risk society are no longer able to distinguish between 'real' and 'artificial' risks. Robinson's trilogy illuminates this dilemma.

Engaging with risks, uncertainty and choice, and emphasising the open-endedness in the climate change story, the *Science in the Capital* trilogy suggests that we are at a crossroads at which we must decide which scenarios seem favourable—or at least less disastrous. The novels propose that the future will not be the end of the world, but it may be the end of the world as we know it: humans will live in and adapt to a climatically changed world, but it becomes clear that in order to maintain a certain standard of living, negotiating between adaptation and mitigation is crucial. Robinson's work then is

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95   Robinson, *Fifty Degrees*, 95.

96   Michel Foucault's term *dispositif* is relevant here, as it describes the elements of an apparatus through which a certain power structure is generated—in this case the security apparatus. See "The Confession of the Flesh." In *Power/Knowledge: Selected Interviews & Other Writings*, ed. Colin Gordon (New York: Pantheon, 1977), 288.

97   Shapiro, Michael J., "The Fear Dispositif," *Theory & Event* 14.1 (2011), http://muse.jhu.edu/, accessed 1 August 2012.

'utopian in the making', a way to imagine alternatives to contemporary life-styles. As the author himself explains,

> the story of [...] adaptation has to be told, and told many times over, I think, so we can imagine it better [...] science fiction is therefore, in that context, a kind of scenario—making, part of the effort of modelling that we do to figure out what we should do to get through.[98]

4   Conclusion

As artists and writers are starting to claim their place in a formerly solely scientific space in order to call attention to the actual global climate change crisis, they engage in the challenges of representation as much as in the ethical and socio-political ramifications of this unprecedented phenomenon. Attempting to grasp the complexity of the issue, novelists present a multitude of stories and a variety of possible futures, but nevertheless create meaning-giving narratives, which allow the reader to engage with climate change beyond the constraints of truth and reality. Literature thus provides the space not only to imagine but also to relate emotionally to climate change—this so far elusive, invisible and distant phenomenon. Matters of fact are then turned into matters of concern in climate fiction.[99]

Nevertheless having to grapple with the narrative and representational challenges of global warming, novelists come up with innovative ways to portray long timescales and thereby re-draw the relationship between short-term human perspectives and long-term environmental consequences.[100] Thus, they encourage readers to consider their place in a future world affected by climate change. The bridging of past, present and future—as in, for example, T.C. Boyle's novel *A Friend of the Earth*—then demonstrates that human time cannot be conceived apart from environmental time.

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98   Robinson, "Abrupt Climate Change," 18.

99   I am referring here to Latour's elaborations on matters of concern in: Latour, Bruno, "Why Has Critique Run Out of Steam ? From Matters of Fact to Matters of Concern," *Critical Inquiry* 30 (2004): 225–248.

100   While beyond the scope of this article, a comparative analysis of different works of eco-fiction engaging with 'future discounting' would certainly provide interesting insights into the changes in portraying long histories, and allow conclusions to be drawn on the particular nature of climate change fiction's portrayal of it. (I am indebted to the anonymous peer reviewer of this volume for the insightful remarks on literary history and genealogies).

Furthermore, without turning to apocalyptic rhetoric, which often dominates environmental discourse, climate fiction such as Robinson's *Science in the Capital Trilogy* engages with the issue of climate risks. The author's three novels ultimately render risks visible by depicting how society and politics deal with the anticipation of environmental crisis. Robinson thereby not only exposes today's commodification of risks but also postulates that action beyond monetary claims is needed, especially in times of uncertainty.

Climate change fiction, though often dystopian, ultimately serves as a counter-discourse to current society's dwelling in crisis and presents "sparks of invention within destruction while providing formal means for recognising our own role in enhancing and alleviating risk".[101] Literature thus serves as the cultural space through which environmental crisis is not only communicated but also mitigated. Both works discussed here are set in and highly influenced by a US American context, and thus engage with the topic of climate change within its particular socio-historical framework. Climate Change, however, is an issue of global scale and thus will require thinking beyond national boundaries, especially when it comes to questions of climate justice. How climate fiction will deal with the challenge of portraying the planetary dimension of global warming remains to be seen.[102]

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101   Mizruchi, "Risk Theory," 127.

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